STOPPING WATER POLLUTION AT ITS SOURCE

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Municipal/Industrial Strategy for Abatement

THE DEVELOPMENT DOCUMENT FOR THE DRAFT EFFLUENT MONITORING REGULATION FOR THE ORGANIC CHEMICAL MANUFACTURING SECTOR

Environment Ontario

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USE OF THE MISA SECTOR SPECIFIC REGULATIONS WITH THE GENERAL REGULATION

Under the MISA program, the monitoring requirements for each sector are specified in two regulations - The General Effluent Monitoring Regulation (Ontario Regulation 358/88) and the relevant sector-specific regulation.

The General Effluent Monitoring Regulation provides the technical principles which are common to all sectors. It covers the "how to" items such as sampling, chemical analysis, toxicity testing, flow measurement and reporting.

The sector-specific regulation specifies the monitoring requirements of each direct discharger, such as the actual parameters to be monitored, the frequency of monitoring and the regulation in-force dates.

The General Effluent Monitoring Regulation, which must be used in conjunction with the sector specific regulation, is published under separate cover. The same document also includes a discussion of the MISA approach to effluent monitoring.

GENERAL INTRODUCTION

The purpose of this document is to provide background information on the development of the MISA Draft Effluent Monitoring Regulation for the Organic Chemical Manufacturing (OCM) Sector.

The pertinent information is set out in six sections. The first four sections provide:

- an overview of organic chemical manufacturing including descriptions of the OCM Sector plants;
- an in-depth explanation of the technical rationale which led to the regulation in its present format;
- the draft effluent monitoring regulation;
- explanatory notes which provide an interpretation of the requirements of the regulation.

Sections five and six of this document contain, respectively:

- the MISA Advisory Committee's (MAC) report to the Minister on the Draft Effluent Monitoring Regulation for the Organic Chemical Manufacturing Sector;
- the Ministry response to the MISA Advisory Committee report.

PART I

OVERVIEW OF THE ORGANIC CHEMICAL MANUFACTURING (OCM) SECTOR

PART I - OVERVIEW OF THE ORGANIC CHEMICAL MANUFACTURING (OCM) SECTOR

I INTRODUCTION

The first part of this section serves as an introduction to the Organic Chemical Manufacturing Sector. It defines organic chemical manufacturing, provides a historical overview of the industry and describes general organic process chemistry including wastewater generation and treatment.

The section concludes with specific information on each of the plants comprising the MISA Organic Chemical Manufacturing (OCM) Sector. Emphasis is placed on the unique features of each site and the potential impact of operations on the environment.

II DEFINITION OF ORGANIC CHEMICAL MANUFACTURING (OCM)

Organic chemical manufacturing (OCM) refers to the manufacture of chemicals based on carbon.

Carbon, almost alone among the elements, has the ability to unite with itself indefinitely to form compounds and its covalent bonding makes it the basis for the formation of a large number of compounds.

The organic chemical manufacturing industry, for the purposes of this Regulation, can be thought of as being made up of three general classes of products:

- organic chemicals;
- plastics;
- synthetic fibres.

III HISTORICAL OVERVIEW OF ORGANIC CHEMICAL MANUFACTURING

The development of organic chemistry as a separate branch of the broader field of chemistry is a relatively recent development, although typical organic compounds have been known and used for centuries.

The late development of organic chemistry was due to the fact that most organic compounds found in nature occur as complex mixtures. Methods for separation and isolation of the pure compounds have become available only during the past two or three centuries.

From the mid 19th century, the development of organic chemistry has been rapid. Utilization of coal tar wastes, generated in the production of coke in blast furnaces, resulted in the synthesis of the first coal tar dye. Subsequently, aromatic hydrocarbons (e.g., benzene, toluene and phenolics) were isolated and produced commercially as the value of such products was

identified. Further recovery led to the manufacture of additional products, such as dyes, explosives and pharmaceuticals.

The growth of the organic chemical manufacturing industry was relatively rapid, due in part to the economic incentives realized by finding practical uses for the by-products and wastes of industrial processes. Chlorine which was a by-product in the production of caustic soda was reacted with benzene to produce chlorinated aromatics. The chlorinated aromatics, in turn, served as intermediates in the production of other more valuable commodities such as phenol and picric acid. Synthetic fibres and polymers were first produced from organic chemicals in the early 1900's with the introduction of rayon from wood pulp and phenol-formaldehyde resins. Specialty chemicals such as surfactants, pesticides and aerosol propellants were later developed to meet commercial needs.

With the commercialization in the late 1930's of nylon by E.I. Du Pont de Nemours Ltd. and high pressure polyethylene by I.C.I. England, the modern era for organic chemicals and synthetic fibres had begun.

The Second World War provided a further impetus for the organic chemical manufacturing industry, especially the synthetic rubber sector. By the early 1950's, the discovery of stereospecific catalysts gave rise to new generations of plastics and elastomers. These included polypropylene, high density polyethylene and various ethylene/propylene and ethylene/propylene/diene rubbers.

The present spectrum of some of the end-products from the organic chemical manufacturing industry is shown in Figure 1.

IV PRINCIPAL RAW MATERIALS

As can be seen in Figure 1, approximately 90% of the chemical precursors used in organic chemical manufacturing are derived from petroleum and natural gas. A small portion of aromatic compounds is derived from coal.

The primary seven petrochemicals used for synthesis of organic chemicals include methane, ethylene, propylene, butane/butene, benzene, toluene, and ortho- and para- xylenes. The synthesized derivatives are in turn used as feedstocks for the synthesis of other derivatives. A typical list of organic chemicals derived from ethylene is shown in Figure 2.

Due to the diverse nature of the products and processes used, few plants in the industry are alike. In general, most plants utilize several of the basic feedstocks as well as several products from other organic chemical manufacturing industries.

V PROCESS CHEMISTRY

Chemical reactions produce a mixture of products, raw materials and by-products. The physical state of the chemical reactants (solid, liquid or gas), presence of solvents or catalysts, the temperature and pressure within the reaction vessel and the configuration of process equipment will dictate the

Figure 1
Petrochemical Sources to End-Use Applications

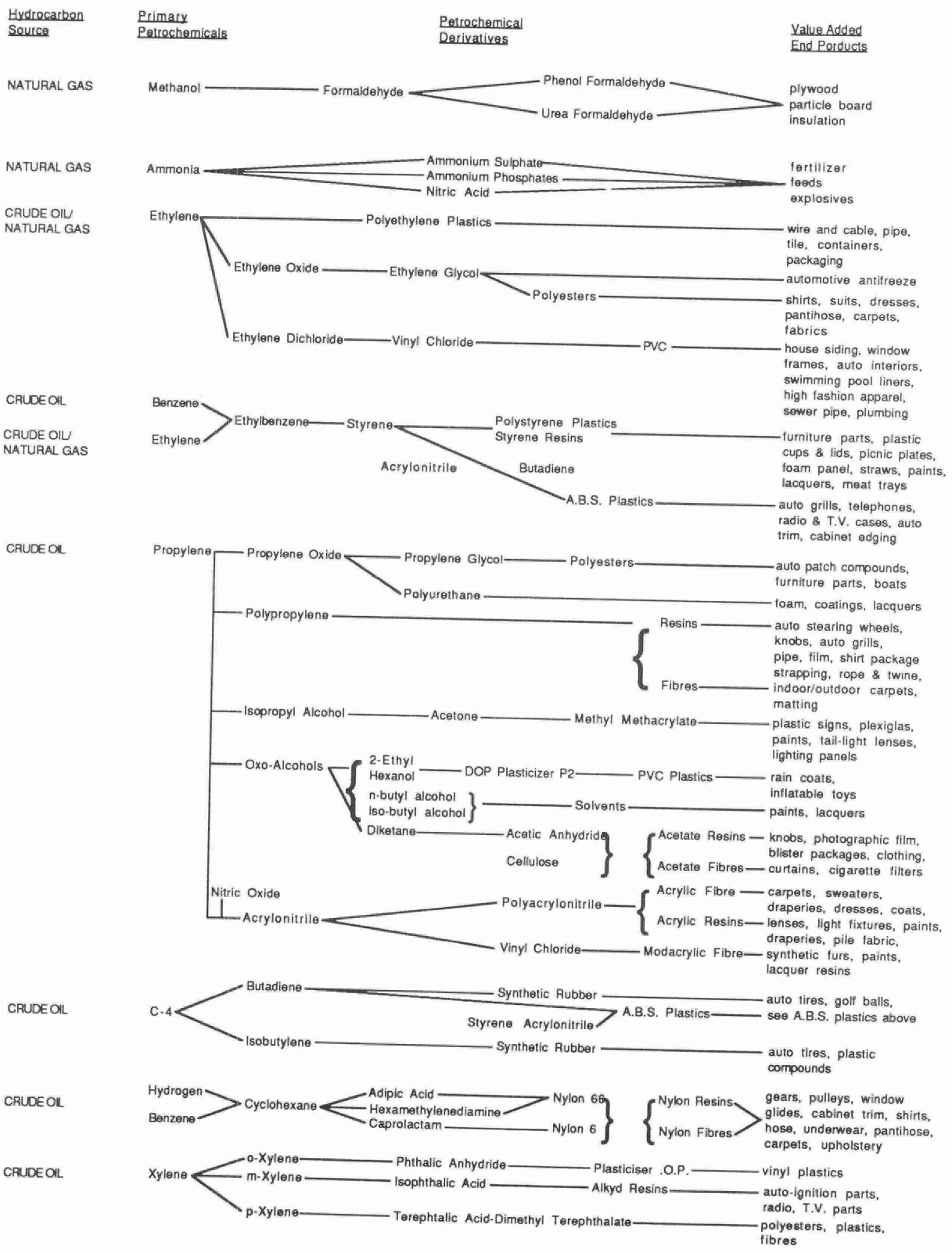
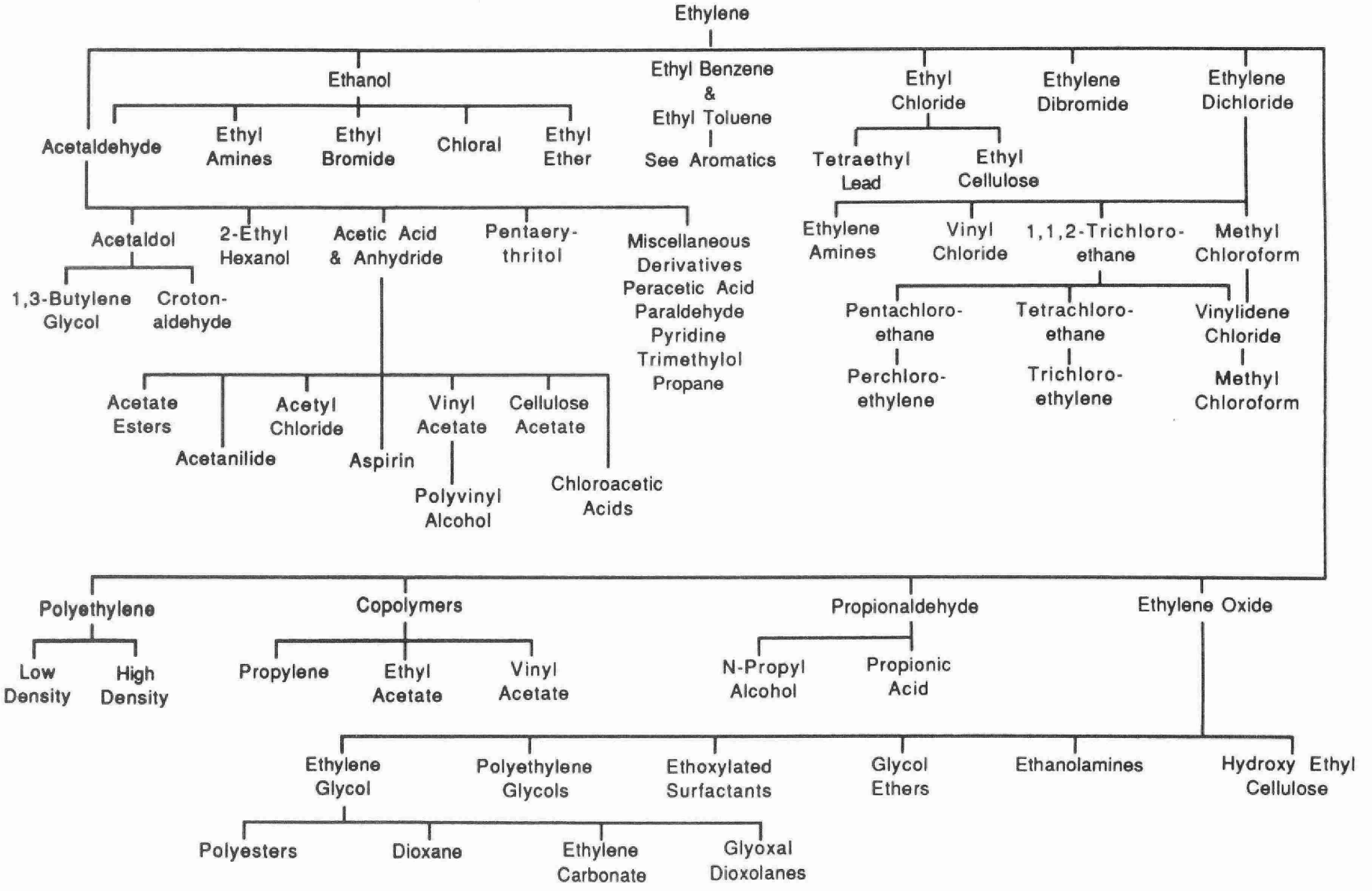


Figure 2
Organic Chemicals Derived from Ethylene



major reaction pathway.

Raw materials and useful by-products are generally recovered from the reaction mixture to increase process efficiency. However, it is often impossible to recover all of the by-products formed.

A typical organic chemical product is manufactured through a three-step process:

(1) combination of reactants under suitable conditions to yield a desired product;

(2) separation of the product from the reaction matrix; and

(3) final purification of the product.

A number of generic unit processes are employed to produce the desired product. Both physical and chemical processes are employed, often as a series of chemical reactions/processes. Some typical processes employed throughout the organic chemical manufacturing industry include the following:

- alkylation
- condensation
- dehydration
- distillation
- esterification
- extraction
- halogenation
- hydrogenation
- hydrolysis
- nitration
- oxidation
- polymerization
- pyrolysis

The organic chemical manufacturing industry is generally made up of a small number of very large plants and a large number of small, specialized plants. Large plants typically employ continuous operations due to the large volumes of chemicals produced. Batch processes are generally used for the production of small volume specialty chemicals. Continuous processes are generally more efficient than batch processes due to a more efficient usage of process reactants and minimization of water usage.

Organic chemical manufacturing plants which are vertically integrated typically produce a number of high volume chemicals using fewer basic unit processes. As an example, synthetic fibres are manufactured using polymerization processes in which simple organic chemicals are reacted to form long-chain polymers. Horizontally integrated industries, such as those which produce specialty chemicals, generally produce lower-volume products which are more complex and require a greater number of process steps.

VI WASTEWATER

The variation in raw materials and processes employed in the organic chemical manufacturing industry results in process wastewaters of varying composition. A wide variety and concentration of pollutants may be found in the wastewaters including both conventional and persistent toxic contaminants. Conventional pollutants which may be present in the wastewaters of the organic chemical manufacturing industries include acids, bases, suspended

solids, oil and grease, organic carbon and nitrogen. Toxic pollutants which may be present include metals, phenols and chlorinated and polyaromatic hydrocarbons. The pollutants in the wastewater may originate from raw materials, reactants, products and by-products.

The discharge of conventional and toxic pollutants can be controlled through a combination of in-plant controls and wastewater treatment. Specific controls and treatment technologies will generally depend on the products and processes used.

VII IN-PLANT CONTROLS

In-plant controls are very cost-effective methods of limiting the discharge of pollutants through process modifications, chemical substitution and water reduction and recycling.

Process modifications include measures to improve the efficiency of the reaction thereby reducing the amount of pollutants discharged in the wastewaters. Recovery of by-products through physical treatment processes or recycling or through the control of spills from process or storage areas will also reduce losses. Additionally, changes to process equipment, such as the replacement of barometric condensers with surface condensers or the replacement of steam jet ejectors with vacuum pumps will further reduce the discharge of contaminants.

Chemical substitution involves the replacement of certain process chemicals known to be toxic and persistent with chemicals with lower toxicity or greater treatability. The replacement of one catalyst with another may increase process efficiency and reduce the toxicity of the effluent discharged.

Recycling water from building drains, scrubbers, vacuum seal discharges and surface runoff will reduce contaminant losses. Cooling water may be recycled and the process chemicals recovered and disposed of through other means. The reduction of water usage is also desirable as a cost consideration.

VIII WASTEWATER TREATMENT

Both biological and physical-chemical processes may be used to control the pollutants discharged in wastewater.

Biological treatment involves contacting the wastewater with microorganisms which metabolize the wastes for energy and synthesis of new cells.

Both aerobic and anaerobic systems are used for biological treatment. Under aerobic conditions, carbon containing wastes are converted to carbon dioxide and water while under anaerobic conditions, methane and carbon dioxide are produced. Using both aerobic/anaerobic reactions in series, nitrogen containing wastes can be converted to nitrogen gas through nitrification/denitrification reactions.

Metals and some hydrocarbons are removed in biological processes by adsorption onto the biological flocs which in turn are removed from effluents

by clarification or filtration.

Biological treatment technologies include activated sludge systems, extended aeration, rotating biological contactors, trickling filters and lagoons. The majority of both municipal and industrial applications use the activated sludge or extended aeration technology.

The conventional activated sludge system involves aeration of a suspended growth culture and wastewater in tanks or basins with about 6 to 12 hours holdup time. In extended aeration, the holdup times are extended to periods approaching 5 to 6 days. Extended aeration systems are capable of achieving high levels of priority pollutant removal.

Physical-chemical treatment technologies utilized by the industry include flow equalization, neutralization, oily water separation, sedimentation/clarification, dissolved air flotation, filtration, coagulation, flocculation, steam stripping, distillation and carbon adsorption. Generally, these technologies are applied to recover products or by-products, to reduce loadings to a biological treatment plant or to remove pollutants for which biological treatment may be ineffective. Activated carbon has been used successfully in conjunction with aerobic treatment to remove difficult pollutants. However, activated carbon applications are limited by the high costs of both carbon and energy for reactivation. Physical-chemical treatment alone generally will not provide sufficient removal of pollutants from wastewater.

IX THE ORGANIC CHEMICAL MANUFACTURING (OCM) SECTOR IN ONTARIO

The organic chemical manufacturing industry in Canada is very large and diverse, consisting of approximately one hundred and fifty plants. Sixty of the plants are located in Ontario with nineteen of them classified as direct dischargers and included in the OCM Sector for regulation under the MISA program.

The nineteen OCM Sector plants are concentrated in five geographical areas of Ontario. Six of the plants are located along the St. Clair River in Sarnia's Chemical Valley. Four plants are located along the shore of Lake Ontario between Cobourg and Kingston while another five are situated along the St. Lawrence River between Maitland and Cornwall. Two plants are located in the Niagara-Fort Erie area and two in Central Ontario near Elmira and Orillia.

Approximately one third of the MISA OCM Sector plants currently use biological treatment on their process effluents. Physical-chemical treatment alone is used at another one third of the OCM Sector plants. The remaining plants discharge some process effluents directly to the receiving water without any form of treatment. The plants usually discharge their process effluents with cooling water or storm water runoff which dilute the contaminants.

Past and present studies by the Ministry and Environment Canada have identified two major areas of environmental concern related to discharges from OCM Sector plants. These have included the St. Clair River at Sarnia

where significant levels of chlorinated and aromatic compounds continue to be discharged. The Cornwall area of the St. Lawrence River has also been named because of discharges of heavy metals, acids and bases.

X SECTOR OVERVIEW

An overview of each of the OCM Sector companies is provided in this section. Information such as the location of the plant site, number of employees, products and raw materials, processes and effluent treatment is provided. Effluent surveys conducted in the past by the Ontario Ministry of the Environment or Environment Canada are noted. The surveys indicated are special surveys which were conducted outside of routine abatement activities. An indication of the past and potential impacts of the effluents on the receiving environment is also provided.

B.F. GOODRICH CANADA INC.

The B.F. Goodrich plant is located in Thorold on the Thorold Townline Road. The plant, employing 170 people, manufactures polyvinyl chloride (PVC) and PVC/polyvinyl acetate resins from monomers using two processes - emulsion and dispersion polymerization.

The emulsion process, used in the older unit, results in greater contamination of process wastewater due to the inherent nature of the process and the age of the plant. The emulsion process wastewater is treated in a biological treatment plant and discharged to an aeration pond, polished in a lagoon and discharged to the Welland River through a single outfall.

The suspension process, used in the newer unit, uses steam stripping to recover vinyl chloride monomer from the effluent before discharging the wastewater to the common site aeration pond and polishing lagoon system.

PVC resins find use in the manufacture of clothing, automobile trim, piping, wire insulation, window frames, swimming pool liners and house siding.

Intake water to the plant is pumped from the Welland River. The site makes use of cooling towers to minimize cooling water usage. Blowdown is routed through the biological treatment plant. The effluent flow in 1987 from the site averaged 2300 cubic metres/day.

Waste PVC and thickened biological sludge is dewatered in a reclaim pond with underdrains. The resulting leachate is directed to a valved off leachate pond and batch discharged every 1-2 months to the Welland River.

Effluent surveys for conventional pollutants, metals and a limited number of priority pollutants and pesticides were conducted in 1981 and 1982 by the Ministry. Environment Canada carried out similar surveys also in 1981 and 1982. Since 1981, the effluent from the site has been monitored annually for conventional pollutants, priority pollutants and pesticides by the Ministry under the Niagara River Monitoring Information System (NIAMIS)(1).

In March of 1988, B.F. Goodrich announced a $75 million expansion of its

facility to double the production capacity by 1990.

BTL INDUSTRIES INC.

BTL Industries Inc., formerly Bakelite Thermosets Ltd., employs approximately 140 people on an 80-acre site situated along the Bay of Quinte at Belleville.

The primary products at the site are phenol-formaldehyde (P/F) resins in both liquid and solid form. Of the two raw materials, formaldehyde is made on site by oxidizing methanol. Hexamethylene tetramine, a cross-linking agent for the resins, is also produced on site from ammonia and formaldehyde.

Phenol-formaldehyde resins find wide end-uses in moulding compounds, electrical insulators and coatings.

Intake water at about 10000 cubic metres/day is pumped from the Bay of Quinte.

Process wastewaters from operating units are discharged to the Belleville municipal sewage treatment plant. Some high strength process wastes from the resin plant are incinerated on site. Contaminated cooling water, storm water and yard runoff are discharged without treatment through two open ditches - East and West, to a marsh area bordering the Bay.

Frequent process spills of phenol and formaldehyde are an ongoing concern.

Effluent surveys of the plant were undertaken in 1980/1981 by the Ministry and Environment Canada. Conventional pollutants, metals, phenolics and priority pollutants were targeted in these investigations.

BORG-WARNER (CANADA) LIMITED

The Borg-Warner plant located at Cobourg on the shore of Lake Ontario reacts acrylonitrile, styrene and polybutadiene latex with peroxide initiators to produce ABS resins and intermediate latex. A subsequent operation compounds dry resins with a variety of pigments to produce coloured pellets. Both operations employ a total of about 140 people at the site.

ABS has a wide range of applications including telephones, drain pipes, automobile trim, hand tools and football helmets.

Water for plant usage of about 1700 cubic metres/day is obtained from the town of Cobourg.

The site has both primary and secondary treatment for its wastewater. Process effluents from both the resins and compounding areas are screened and passed through two equalization ponds with a neutralization pit in between. After primary clarification, the effluent is directed to a biological treatment plant and then to a final clarifier. All contaminated cooling and storm water as well as yard runoff are passed through the biological treatment plant which discharges through a submerged outfall into Lake Ontario.

Some potential exists for a loss of ABS polymer to Lake Ontario in the event of breakage of the glass transfer lines.

The Ministry and Environment Canada have not conducted any recent surveys of the plant's effluents.

CANADIANOXY CHEMICALS LTD.

CanadianOxy Chemicals Ltd., Durez Division, is a division of Canadian Occidental Petroleum Ltd. Approximately 50 people are employed at the plant in Fort Erie. It is the only plant in the Sector which operates 5 rather than 7 days per week.

The company manufactures phenol-formaldehyde (P/F) resins, moulding compounds, furfural alcohol-formaldehyde resins and ethylene bis-stearamide wax in semi-continuous batches.

Raw materials used for P/F resins include nonyl phenol, phenol, cresol, formaldehyde and catalysts. Furfuryl alcohol, formaldehyde and furfuraldehyde are used to produce the furan resins. The resins are used in the manufacture of coatings and insulation.

Intake water to the plant at about 330 cubic metres/day is obtained from the Town of Fort Erie. Use of cooling towers reduces the fresh water requirements for the site.

Reaction water from the P/F resin kettles is distilled off, stored and shipped off-site for treatment or disposal. All other processes are dry. Cooling water from the P/F resin area and storm water are discharged without treatment through a single outfall to Frenchmans Creek and subsequently to the Niagara River.

The major source of wastewater phenol contamination is the resin flaker belt direct contact cooling water.

An effluent survey was conducted in 1981/1982 by the Ministry and in 1985 by Environment Canada for conventionals, metals and priority pollutants. The Niagara River Toxics Committee produced a report on the industrial discharges to the Niagara River including those from CanadianOxy Chemicals Ltd.

Under the Niagara River Monitoring Information System (NIAMIS) (1), the Ministry has analyzed the company's effluent for conventional parameters and priority pollutants on an annual basis since 1981.

CELANESE CANADA INC.

Celanese Canada Inc. is located about 30 miles west of Kingston on the shore of Lake Ontario. Approximately 800 people are employed at the plant.

Polyester staple fibre and tire yarn are manufactured in a continuous process through the polymerization of ethylene glycol and terephthalic acid. The polymer is extruded into filaments which are then processed to produce staple

and tire yarn. These products find uses in textiles, carpet and tire cords.

Intake water at about 13000 cubic metres/day is pumped from Lake Ontario. Three outfalls discharge effluents from the site.

Process effluents, some cooling water and effluent from the site sanitary treatment plant are treated in an activated sludge plant. The treatment plant effluent, cooling water and storm water are discharged through the centre outfall to Lake Ontario. East and west outfalls discharge cooling water, boiler blowdown and storm water to the lake. The west outfall discharges to the Lake by way of a small holdup pond.

In-plant spills may result in a direct loss to Lake Ontario of Dowtherm, ethylene glycol or terephthalic acid.

An effluent survey of this plant conducted in 1981 by Environment Canada included monitoring for conventionals, metals and priority pollutants. The Ministry performed preliminary characterization of the effluents in 1985.

CORNWALL CHEMICALS LIMITED

Cornwall Chemicals Ltd. is owned by C-I-L in partnership with Stauffer Chemicals. The plant is situated adjacent to the C-I-L chlor-alkali plant and inorganics packaging plant (CONPAC) in Cornwall. Approximately 70 people are employed by Cornwall Chemicals. Monitoring requirements for both the chlor-alkali and CONPAC plants will be specified under the Inorganic Chemical Sector.

Natural gas and sulphur are converted into carbon disulphide at the plant in a continuous operation. A further reaction with chlorine produces carbon tetrachloride. Chlorinated paraffins are produced in smaller quantities in batch operations. The chemicals are sold as feedstocks to other industries.

Intake water to the plant at about 800 cubic metres/day is obtained mainly from the City of Cornwall. About 25% of the water requirements in winter are obtained from a deep well on the site. Two cooling towers help to reduce the fresh water requirements.

Process effluents from the manufacturing areas are passed through a single neutralization and settling pond prior to discharge with cooling tower blowdown and storm water to the Brookdale Avenue storm sewer. The discharge from the plant mixes in the sewer with effluent from the other C-I-L plants and a paper mill prior to discharge to the St. Lawrence River.

Several studies in recent years have focused on the Cornwall area. An Environment Canada report entitled "Cornwall Point Source Survey 1980-1981" (2) presents the results obtained from studies of several Cornwall area plants including Cornwall Chemicals Ltd. A second report was published by the Ministry in February 1988 entitled "St. Lawrence River Investigations - Volumes 1, 2 and 3" (3).

COURTAULDS FIBRES CANADA (A DIVISION OF COURTAULDS FIBERS INC.)

Courtaulds Fibres Canada, formerly Courtaulds North America Inc., is located at the east end of Cornwall along the St. Lawrence River. The company employs about 400 people. Its operations at Cornwall date back to 1925.

Courtaulds Fibres produces rayon fibre and raw viscose. The raw viscose is piped directly to the Courtaulds Films plant for conversion to cellulose film.

The rayon fibre is produced by first reacting dissolving grade pulpwood with caustic and carbon disulphide to produce viscose. The raw viscose solution is filtered and aged and then extruded through spinnerets into sulphuric acid baths containing zinc salts to form rayon filaments. The rayon filaments are stretched, chopped into staple, washed, bleached and treated with finish before drying and baling as a final product.

The cleaning of the viscose filters results in a highly alkaline (pH 10-11) wastewater. The subsequent wash baths are the major sources of acid and zinc wastes in the wastewaters discharged.

Rayon fibre is used in the manufacture of clothing and carpet.

Two intake pumps at the St. Lawrence River provide process and cooling water to the plant at the rate of about 12000 cubic metres/day.

Process effluents, cooling water and storm water are discharged directly to the River through six outfalls in combination with effluents from the Courtaulds Films plant. These sewers include an acid sewer (with Courtaulds Films), a viscose/alkaline sewer (with Courtaulds Films) and a combined storm sewer. Effluents are also discharged directly to the River from the acid recovery system, tank car unloading area and from the Caravelle sewer.

Attention has focused on this area for many years. Courtaulds Fibres was issued a Control Order in 1977 that required a reduction in loadings of sulphuric acid, zinc, BOD5 and suspended solids. The Control Order also required the installation of an extended diffuser outfall.

The acid and viscose/alkaline sewers now discharge via diffuser-equipped outfalls. Modernization of the plant reduced sulphuric acid and BOD5 loadings, however, the loadings are still above the provincial objectives (3).

Several other effluent surveys have been conducted by both the Ministry and Environment Canada in order to monitor concentrations of conventionals, metals and trace organics and their effect on the surrounding environment. Two reports were produced entitled "Cornwall Point Source Survey 1980-1981" (2) and "Assessment of Courtaulds' Effluent on the St. Lawrence River near Cornwall" (4).

COURTAULDS FILMS CANADA (A DIVISION OF INTERNATIONAL PAINTS (CANADA) LIMITED)

Courtaulds Films, formerly BCL Canada Inc., is located adjacent to the Courtaulds Fibres plant and employs approximately 250 people.

Transparent cellulose film (cellophane) is produced in a continuous operation from raw viscose supplied by the Courtaulds Fibres plant. The raw viscose is filtered, extruded into a film, passed through a series of chemical baths including bleaching and softening, dried and coated with polyvinylidene chloride (PVDC).

The cellulose film is used primarily for packaging materials.

The coating operation in its use of PVDC dispersed in toluene and tetrahydrofuran is the main source of priority pollutants from the film operations in the storm sewer.

Water pumped by Courtaulds Fibres from the St. Lawrence River is shared for process and some non-contact cooling water needs while well water is used solely for non-contact cooling in chill rolls. A total of four sewers discharge effluent from Courtaulds Films. Three of these sewers are combined with discharges from Courtaulds Fibres prior to discharge to the St. Lawrence River.

Cooling water and storm water runoff are discharged through a municipal storm sewer north of the site.

Process wastewaters from the acid baths are discharged to an acid sewer which is piped through Courtaulds Fibres property and combined with the acid discharge from Courtaulds Fibres. A sulphide/alkaline sewer carries discharges from the sodium sulphide baths and is also combined with the Courtaulds Fibres alkaline sewer. The storm sewer which carries building drain, cooling water and steam stripper coating effluent passes through Courtaulds Fibres property directly to the river with only small additions from Courtaulds Fibres. None of the streams described above undergo any treatment.

Courtaulds Films was issued a Control Order in 1977 to reduce BOD5, suspended solids and sulphuric acid loadings and to install an extended diffuser outfall. The extended diffuser outfall was installed by Courtaulds Fibres for the shared sewer.

The Cornwall area has been the focus of several investigations by both the Ministry and Environment Canada. Conventionals, metals and trace organics were investigated in 1980/1981. An EPS report entitled "Cornwall Point Source Survey 1980-1981" (2) presents the results of that survey.

DOMTAR INC.

The Specialty Chemicals Division of Domtar Inc. at Longford Mills on the shores of Lake St. John, north of Orillia, employs approximately 70 people in the batch production of detergents and detergent bases.

Non-ionic detergent ethoxylates are produced by reacting long-chain fatty acids, fatty alcohols and alkylated phenols with ethylene oxide. Reaction of the ethoxylates, fatty alcohols or alkyl benzenes with sulphur trioxide produces anionic detergents. Reactions of fatty acids with ethanolamines produces non-ionic alkanolamides. Cationic tallow amine ammonium chlorides are produced

by reacting amines with alkyl chlorides.

About 300 cubic metres/day of water are pumped from Lake St. John to the site.

Process effluents, boiler blowdown and storm water are directed to an activated sludge treatment plant with subsurface aeration. Excess biological sludge is dewatered in a plate and frame press and used as a low grade fertilizer on land. Non-contact cooling water joins the treatment plant effluent and both are discharged through a single outfall to Lake St. John.

Lake water surveys were conducted by Domtar in 1973, 1975 and 1983. The latter survey was done jointly with the Ministry of Natural Resources.

DOW CHEMICAL CANADA INC.

The Dow manufacturing complex is situated along the St. Clair River in the heart of "Chemical Valley". Operations first began at the site in 1942 when the Canadian Government asked the Dow Chemical Company to build a plant for the production of synthetic rubber.

After the war, Dow began to diversify into other product areas. Today the site occupies 185 hectares and employs about 1300 people in 13 individual plants.

The major products manufactured at the site include vinyl chloride monomer, propylene oxide, propylene glycols, chlorine, caustic soda, anhydrous hydrochloric acid, styrene, polystyrene, latex, ethylbenzene, chlorinated solvents, epoxy resins, and high density and low density polyethylene.

Two pump houses provide process and cooling water from the St. Clair River at a rate of about 730,000 cubic metres/day.

Effluents are discharged from the site through seven outfalls.

Process effluents from the propylene oxide, propylene oxide derivatives, latex, and chlor-alkali plants are treated in a secondary biological treatment plant. Steam strippers are used to treat the effluents from the styrene, latex and high density polyethylene plants.

Environmental impacts from Dow's operations were first noted in the late 1960's when the fishing industry in Lake St. Clair was closed down due to mercury contamination in fish. The source of the mercury was found to be the mercury cell chlor-alkali process used by Dow. The mercury cell units were subsequently replaced with the diaphragm cell process. The situation improved so that in the early 1980's the fishing industry in Lake St. Clair was reopened to a limited extent.

More recently, the August 1985 Dow spill of perchloroethylene into the St. Clair River and the related discovery of black tarry puddles on the river bottom near Dow resulted in daily headlines (5). The company spent about $1 million to clean up the river as a result of the spill.

In addition to cleaning up the puddles using divers and suction equipment, Dow installed a free phase collection system in each of the First Street sewers, a river front barrier to prevent off-site migration, a spill containment facility and blocked the 30-inch tile drain which was the source of ongoing perchloroethylene losses.

Dow also segregated its process water from uncontaminated cooling water for its chlorinated solvents plant and directed it to the Block 90 spill containment pond.

MISA pilot site investigations in 1986 of the St. Clair River (6) in the vicinity of Dow showed decreased perchloroethylene accumulations in juvenile fish since the 1985 spill. The 42" sewer was noted as a major source of both volatile and higher chlorinated hydrocarbons. However, a comparison with 1985 data indicated reductions on the order of 83% for total volatile loading and 82% for the higher chlorinated hydrocarbons associated with the Dow complex.

A subsequent report (7) indicated total loadings of perchloroethylene and carbon tetrachloride were reduced by 79% and 95% respectively between 1985 and 1986. Some low but consistent mercury losses were measured from the Dow 54" sewer.

A major study of the St. Clair River by Environment Canada in 1986 entitled the "Upper Great Lakes Connecting Channel Study" (UGLCCS) (8) (Draft Report) indicated that Dow continued to be a significant point source of discharges (>10% of the total) to the St. Clair River of hexachlorobenzene (HCB), octachlorostyrene (OCS), phenols, lead, zinc, mercury, copper, nickel, chlorides, TOC, arsenic, chromium, volatile organics and base neutral extractables (except for PAH's and phthalates).

DU PONT CANADA INC. - CORUNNA

The St. Clair River Works site of Du Pont, located along the St. Clair River at Corunna began operations in 1959. There have been several expansions of the plant since that time. Approximately 260 people are currently employed at the site.

A complete range of low to high density linear polyethylene resins are manufactured using a low pressure cyclohexane solution process with ethylene and butene/octene. These resins find use in both flexible and rigid applications including piping, tile, containers and milk film bags.

Intake water for process and cooling is pumped from the St. Clair River at an average rate of 46000 cubic metres/day. Process effluents, spent cooling water and storm water are passed through two ponds in series. A pellet skimming pond removes any polyethylene beads and a final skimming pond allows recovery of hydrocarbons prior to discharge through a single outfall to the river.

Environment Canada conducted an effluent survey of the St. Clair River area in 1979/1980. The 1986 UGLCCS study (8) by Environment Canada indicated that the site was a minor point source of discharges (<10% of the total) to the St. Clair River of phenols, mercury, copper and nickel.

DU PONT CANADA INC. - KINGSTON

The Kingston site of Du Pont Canada Inc. is located west of Kingston along the shore of Lake Ontario. The site employs approximately 1500 people.

Nylon 66 is produced by reacting adipic acid with hexamethylene diamine. The majority of the nylon polymer is extruded into filaments. The bulk of the site operations involve the optimization of filament physical properties through heat stretching, twisting, bulking and combining the filaments into yarn. The fibres are also treated with fatty acids and natural oil spin finishes and fluorinated anti-soil chemicals. The final products include light textile, industrial and carpet yarns and nylon staple. Some nylon 66 is cast into flake for compounding into engineering resins at the Du Pont Maitland site.

Intake water is obtained from Lake Ontario at an average rate of 73000 cubic metres/day.

The majority of process wastes are routed, with sanitary wastes, to a trickling filter for pretreatment prior to discharge to the Township Sanitary Treatment Plant. Process effluents from the staple and flake areas, cooling water and storm water are combined in a catch tank/skim pond prior to discharge to a dyked outfall lagoon with a culvert discharge to Cataraqui Bay. A service sewer containing cooling and storm waters also discharges to the lagoon, without any treatment.

The site's main environmental concern has been the small on-going loss of biphenyl/biphenyl oxide heat transfer fluid to Cataraqui Bay. To this end, the company has conducted regular biological surveys of Cataraqui Bay since 1966. No biphenyl/biphenyl oxide has been detected in the sediment outside the dyked lagoon.

DU PONT CANADA INC. - MAITLAND

The Maitland Site is located along the St. Lawrence River about 100 km east of Kingston. Approximately 600 people are employed at the site.

In 1953, the site began production of adipic acid and hexamethylene diamine for polymerization into nylon 66 at the Du Pont Kingston plant. Today these two raw materials continue to be the major products at the site although the site has diversified into additional product areas.

The site currently manufacturers chlorofluorocarbons, spandex yarns, engineering (nylon 66) resins, dibasic acids, hydrochloric acid and hydrogen peroxide. Tetraethyl lead, a gasoline antiknock compound was produced at the site for over 20 years but was phased out in 1985.

Chlorofluorocarbons are used in refrigeration systems, as solvents in the computer industry and as blowing agents in making egg cartons, meat trays and protective shipping materials. Spandex elastic yarns find applications in leotards, pantyhose and hockey uniforms. Nylon 66 flake is compounded with elastomers to produce a tough engineering resin used to make welder's helmets, bicycle wheels and skate guards.

A world scale, state-of-the-art, hydrogen peroxide plant was started up in 1987 with the purpose of supplying the pulp and paper industry with a bleaching agent.

The site intake water is pumped from the St. Lawrence River at an average rate of about 180000 cubic metres/day. About 98% of the total intake is used as once-through cooling water.

Process effluents are directed to an extended aeration biological treatment plant with nitrification and denitrification. Typically 95% of the carbonaceous and 80% to 95% of the nitrogenous wastes are removed by the biological treatment. The treatment plant effluent is combined with spent once-through cooling water in one of three detention ponds.

Spent once-through cooling water is discharged via a cribbed ditch to three detention ponds. The effluent from the ponds is discharged to the St. Lawrence River through two submerged outfalls.

Some process materials from barometric condensers, scrubbers, seal pots and building floor drains also end up in the cribbed ditch.

The site makes use of on-line spill and pH monitors on key streams to ensure early detection of any process spills. A second level of protection against spills impacting the river is provided by the three detention ponds with their oil skimmers and the ability to isolate the pond contents.

In 1983 the Ministry reported increased lead levels in fish in the St. Lawrence River near Maitland. The uptake was traced to the discharge of alkyl lead from the antiknock compound plant. However, with the shutdown of the plant in 1985, the impact on the environment was eliminated.

Effluent surveys were conducted by Environment Canada in 1982 and 1984. The company has also undertaken periodic surveys of both the site effluent and the river in the vicinity of the outfall.

A report (9) of a 1975 study of the impact of site discharges on the river reflected conditions prior to the full operation of the biological treatment plant.

A second report (3) was published in 1988. The report identified a sediment lead plume extending about 3 km downstream of the outfall. However, with the shutdown of the tetraethyl lead plant in 1985, the lead levels both in fish and the sediment were expected to decline.

ESSO CHEMICAL CANADA (A DIVISION OF IMPERIAL OIL LTD.)

Esso Chemical Canada began operations in 1957 as part of the Imperial Oil Ltd. complex located along the St. Clair River in Sarnia's Chemical Valley. Approximately 400 people are employed by the chemicals operation.

A wide range of products are manufactured by Esso Chemical including polyvinyl chloride (PVC), high density and linear low density polyethylene,

naphthas, lube oil additives, C5-C15 olefins and fuel additives.

Aromatics are also produced from feedstock supplied by the refinery while ethylene and propylene are produced from natural gas.

PVC formulations are used in the manufacture of clothing, automobile trim, piping, wire insulation, window frames, swimming pool liners and house siding. Polyethylene is used for consumer packaging, cable insulation, piping and tiles.

Intake water at about 33700 cubic metres/day is obtained from the Esso Petroleum refinery which has two pumphouses on the St. Clair River.

The Esso Chemical plant has separate sewer systems for oily and clean waters. The clean water sewer receives PVC plant process water, polyethylene contact water, cooling tower blowdown and storm water. Some biological sludge is added to the stream prior to the clean water impounding basin to reduce phenols.

Contaminated or potentially contaminated water is passed through oil separators to the oily water impounding basin. The discharge is pumped through dual media sand-anthracite and carbon adsorption filters to the clean water impounding basin. The clean water basin discharge is pumped to the St. Clair River.

The 1986 Environment Canada (UGLCCS) survey (8) indicated that Esso Chemical was a minor point source of discharges (<10% of the total) to the St. CLair River of TOC, zinc and arsenic.

ETHYL CANADA INC.

The Ethyl Canada plant at Corunna is located south of the Shell refinery along the St. Clair River. It employs about 150 people.

Production of tetraethyl lead (TEL) from lead-sodium alloy and ethyl chloride began at the site in 1956. Since that time, the site has expanded production to include tetramethyl lead, ethyl chloride, diesel ignition improvers and aluminum alkyls.

Intake water to the plant at an average of 33300 cubic metres/day is supplied by Shell Canada which obtains its water from the St. Clair River.

Contaminated TEL wastewater is directed to a sludge pit for settling of lead solids. Effluent from the sludge pit is pH adjusted and treated with sodium borohydride to reduce alkyl lead. The resulting lead particles are removed by settling in a lamella filter and by filtration in a Hydromation filter. The resulting effluent is discharged to the plant sewer systems.

Process effluent from ethyl chloride production is neutralized in a limestone pit and discharged to the TEL sewer systems.

The process effluents, spent once-through cooling water and storm water are discharged through a single outfall to the St. Clair River.

An Environment Canada survey of the plant's effluent in 1984 found high levels of ethylene dichloride, ethylene dibromide and ethyl chloride. Ethylene dichloride production was subsequently discontinued in 1986 but it is now a purchased raw material for blending with TEL.

The 1986 Environment Canada (UGLCCS) survey (8) indicated that the plant was a significant point source of discharges (>10% of the total) to the St. Clair River of polyaromatic hydrocarbons, mercury and chlorides. It was the major source of total lead and ethyl chloride and virtually the only source of ethylene dichloride and ethylene dibromide discharges to the St. Clair River.

NOVACOR CHEMICALS LTD.

Novacor Chemicals Ltd. operates the former Union Carbide Canada Ltd. plant located in Mooretown, south of Sarnia. The plant was built in 1968 and currently employs about 250 people.

High density and low density polyethylene is produced continuously at the site using a gas phase polymerization process. Minor quantities of poly oils and waxes are also produced. Polyethylene finds wide application in consumer packaging, piping and wire insulation.

Intake water at about 2400 cubic metres/day is provided by the Sarnia water supply system. The use of a cooling tower reduces the site's fresh water demands.

The main use of the water is for non-contact cooling in heat exchangers and contact cooling for polymer on extrusion. All spent water, boiler and cooling tower blowdown and effluent from the on-site sanitary waste treatment plant are routed to a process wastewater pond for solids settling. The pond effluent is discharged to the St. Clair River through an extended outfall with a diffuser.

Storm water is collected in two retention ponds with traps for polyethylene pellets. The retention ponds normally discharge to the process wastewater pond.

The Environment Canada 1986 Draft Upper Great Lakes Connecting Channel Study report (8) did not list this plant as being an environmental concern.

POLYSAR LIMITED

The Polysar Limited manufacturing complex is located along the St. Clair River in Sarnia's Chemical Valley. The site, employing about 2200 people, is bordered by Esso Chemical/Imperial Oil Ltd. to the north and Dow Chemical to the south.

Polysar began production of synthetic rubber at the site as the Polymer Corporation in 1943 to replace a wartime shortage of natural rubber. Today Polysar continues to produce a wide variety of rubbers including styrene-butadiene, butyl, polybutadiene, nitrile-butadiene, halobutyl and styrene-butadiene latex.

In addition, the site produces styrene, ethylbenzene and polystyrene and extracts isobutylene and butadiene from steam cracked C4 fractions. Polysar also supplies ethylene and aromatics to other plants in the area.

Plant intake water averaging about 290000 cubic metres/day is obtained from the St. Clair River.

With the exception of four process streams from the butyl, styrene and polybutadiene plants, all streams are treated at the site biological treatment plant (Biox) in operation since 1983. The Biox effluent is discharged to the St. Clair River via the Cole Drain. The Cole Drain also discharges once-through cooling water and storm water to the river. The drain flows through the Polysar property but originates upstream of the plant.

Polysar currently treats liquid wastes from other plant sites in its Biox unit.

Site effluents are discharged to the St. Clair River through seven outfalls. An additional five outfalls discharge storm water.

Surveys of Polysar's effluents were conducted in 1979/80 and in 1985 by Environment Canada.

The most recent effluent survey conducted by Environment Canada in 1986 (8) indicated that Polysar was a significant point source of discharges (>10% of the total) to the St. Clair River of phenols, cyanide, oil and grease, nickel, cobalt, phosphorus, ammonia, TOC, arsenic and chromium. Polysar was the major source of discharges of polyaromatic hydrocarbons, cobalt, acid extractables and two volatile organics - benzene and chloromethane. Spills to the river of acetonitrile, a solvent used for butadiene extraction, continue to be a problem.

In April 1988, Polysar Limited announced a five year $20 million plan to modernize its wastewater systems and to upgrade its facilities which impact on the environment.

ROHM AND HAAS CANADA INC.

The Rohm and Haas site is located along the St. Lawrence River on the eastern outskirts of Morrisburg. The plant employs about 110 people.

Polymethacrylate sheet (plexiglas) is manufactured at the site by polymerization of methacrylic acid esters. Oil additives are also produced through solution or emulsion polymerization of longer chain alcohol esters.

The plexiglas sheets are used for signs and lighting panels.

Intake water is obtained from the Municipality of Morrisburg at an average rate of 500 cubic metres/day.

The plant has no effluent treatment. Process streams from the oil additives plant pass through an oily water separator. Other process effluents are discharged with cooling water directly to the St. Lawrence River. Storm water

is collected in a ditch on the property. A single outfall discharges the process effluents, cooling water and storm water to the river.

The Ministry conducted an effluent survey of priority pollutants in 1987. The company carried out limited surveys for conventional pollutants in 1984 and 1986.

UNIROYAL CHEMICAL LTD.

The Uniroyal Chemical plant, located beside the Canagagigue Creek in Elmira, employs approximately 100 people.

Batch processes produce a diverse range of chemical formulations including rubber chemicals, liquid urethanes, agricultural pesticide chemicals, antioxidants/stabilizers, water treatment chemicals and nonyl phenol. As many as 200 individual processes are used at this site.

Intake water is obtained from municipal wells and the Canagagigue Creek. Process effluents are treated by a wet air oxidation system and activated carbon treatment system prior to discharge to the Elmira Sanitary Treatment Plant (STP). Cooling water and storm water are discharged directly to Canagagigue Creek through eight outfalls.

A large number of surveys have been conducted in the area of the Uniroyal plant in recent years due to a historical problem of groundwater contamination. A recent Ministry survey focused on the effects of the Elmira STP on the Creek.

PART II

TECHNICAL RATIONALE FOR THE MONITORING REQUIREMENTS

PART II - TECHNICAL RATIONALE FOR THE MONITORING REQUIREMENTS

I INTRODUCTION

The purpose of the technical rationale section is to explain the steps in the development of the OCM Effluent Monitoring Regulation.

The section provides background information on the regulation process, the options considered in arriving at the specific OCM Sector monitoring approach and the databases and criteria used for parameter and monitoring frequency selection.

II DEFINITION OF THE OCM SECTOR - STANDARD INDUSTRIAL CLASSIFICATION (SIC) SYSTEM

A simple definition of the OCM Sector is difficult to derive because of the complexity of the products and manufacturing processes used.

One approach is to use the Standard Industrial Classification (SIC) codes originally established in Canada for data gathering purposes by Statistics Canada (10). These codes classify establishments by type of activity and may at best be somewhat arbitrary and perhaps technically ambiguous. Nevertheless, manufacturing sites discharging directly to surface watercourses under the SIC codes shown in Table 1 of the Appendix were eligible for inclusion in the OCM Sector for the purposes of the MISA regulations.

The SIC codes used to define the organic chemical manufacturing industry in the U.S. (11) are also shown in Table 1 of the Appendix.

III THE NEED FOR REGULATION

Currently, the Organic Chemical Manufacturing (OCM) Sector plants monitor and report only certain standard parameters and conventional pollutants under the Ministry of the Environment's Industrial Monitoring Information System (IMIS).

The reportable data include effluent flow and may include pH, BOD5, COD, TOC, DOC, nitrogen (as NH3, NH4, NO3, or TKN), total phosphorus, total suspended solids (TSS), total dissolved solids (TDS), volatile suspended solids (VSS), phenols, sulphides, selected metals and a very few indicator organic compounds. On average, less than half of the above list is reported at a given plant site.

Site specific monthly average IMIS data are published by the Ministry in its annual report entitled "Report on the Industrial Direct Discharges in Ontario" (12). The IMIS data are reported to the Ministry on a voluntary basis.

Requirements for some of the standard parameters and conventional pollutants reported under IMIS are imposed by Control Orders or Requirements for Direction, Certificates of Approval or Federal Regulations and Guidelines.

Ministry guidelines are taken from various sources including Provincial Water Quality Objectives (PWQO) and previously published guidelines for industrial sectors.

The Ministry water management guidelines are summarized in the publication entitled "Water Management: Goals, Policies, Objectives and Implementation Procedures of the Ministry of the Environment" (13), referred to as the Blue Book. Provincial Water Quality Objectives (PWQOs) are currently available for a total of 74 pollutants including 51 EMPPL substances. It is the goal of the Ministry to:

- establish PWQO or Guidelines for all of the EMPPL substances that possess the potential for moderate to high aquatic environmental damage;

- assemble the available aquatic toxicological and other appropriate information for the remaining EMPPL substances, and maintain the capability to set Provincial Water Quality Guidelines for such substances on demand.

There are currently no regulations for specific, toxic and persistent pollutants, generally termed "priority pollutants". In fact, there exists only a very limited data base on the concentrations and loadings of these priority pollutants being discharged into Ontario's waterways. Some sector plants have virtually no data on the concentration of these pollutants in their effluents while others, especially those in the St. Clair River region, have a limited data base generated from one time surveys of short duration by either the Ministry or Environment Canada.

Clearly there is a need for a comprehensive long-term data base on the discharges of priority pollutants from the OCM Sector plants. The MISA effluent monitoring regulation for the OCM Sector will provide this data base.

The effluent limits regulation will be developed for the OCM Sector on the basis of the monitoring data base in conjunction with data on Best Available Technology Economically Achievable (BATEA) and Ministry water quality objectives. Because the priority pollutants are amenable to treatment through the use of available technology, the effluent limits regulation will ensure the required technology is put in place to virtually eliminate the discharge of toxic pollutants.

IV THE U.S. EPA EXPERIENCE

The U.S. EPA, after 13 years in the making, has published its effluent limitations guidelines for the Organic Chemicals, Plastics and Synthetic Fibres (OCPSF) Industry in the November 5, 1987 Federal Register (14).

Under these guidelines, two technology-based subcategories were established for "Best Available Technology Economically Achievable" (BATEA) effluent limits:

1) direct discharge point source with end of pipe biological treatment; and

2) direct discharge point source with in-plant physical-chemical treatment.

A total of 63 toxic pollutants were limited for subcategory 1 and a slightly shorter list of 59 of the same pollutants for subcategory 2.

In developing its effluent limitations guidelines and standards for toxic pollutants, EPA originally addressed a list of 126 toxic pollutants, referred to as the priority pollutants list, that was developed in the late 1970s (15). In the subsequent rule-making process, EPA eliminated 26 toxic pollutants from this list because they were not produced nor used as raw materials in the U.S. OCPSF industry. An additional 33 compounds were eliminated for one of the following reasons:

- not detected by analytical methods available;
- detected in a small number of sources and uniquely related to these sources;
- effectively controlled by technologies upon which are based other effluent limitations;
- present in trace amounts, neither causing nor likely to cause toxic effects.

Finally, the EPA reserved from the guidelines under BATEA, four toxic pollutants for subcategory 1 and eight toxic pollutants for subcategory 2 to arrive at the list of pollutants to be limited.

Seven subcategories of plants were established for limiting three conventional pollutants, BOD5, pH and total suspended solids (TSS) on the basis of "Best Practicable Control Technology Currently Available" (BPT).

Throughout the technical development of its effluent limitations guidelines dating back to 1974, the EPA was plagued with legal challenges. The EPA originally promulgated effluent limitations guidelines and standards for the OCPSF industry in 1974.

However, as a result of successful court challenges, the EPA in 1976 withdrew or had remanded virtually all of the regulations except for butadiene manufacture regulations for the organic chemical manufacturing industry and pH regulations for the plastics and synthetic fibres industry.

Several environmental groups sued the EPA in 1976 (including the Natural Resources Defense Council Inc.) because it was unable to meet many of the deadlines for promulgating effluent limitations guidelines and standards as set out in the 1972 Clean Water Act.

In settling the lawsuit, EPA executed a Settlement Agreement by which it was required to promulgate BATEA effluent limitations guidelines and pretreatment standards for a variety of major industries including the OCPSF industry. Many of the basic elements of the Settlement Agreement were incorporated into the Clean Water Act of 1977. With the withdrawal/suspension of the

national regulations in 1976, EPA initiated studies and data gathering to obtain a basis for issuing new effluent limitations guidelines and standards.

Initial EPA regulatory strategy between 1976 and 1981 focussed on limits based on mass loadings. By 1981, however, because of the lack of resources, EPA adopted a concentration-based end-of-pipe limitation strategy for process wastewater only.

On March 21, 1983, EPA proposed an application of BPT to control BOD5, pH and TSS and BATEA to control up to 44 priority pollutants. Following additional information gathering and extensive public and industry comments, EPA published numerous changes in post-proposal notices of availability of information on July 17, 1985 (16), October 11, 1985 (17) and December 8, 1986 (18). The final regulations were published on November 5, 1987.

In reviewing the U.S. EPA rulemaking process, it became clear that a lack of quality data was the single most troublesome aspect of the process. EPA had to continually undertake additional studies in response to industry criticism of its database and its data editing rules.

To avoid the U.S. EPA problems, the MISA program took the approach at the outset of requiring all of the companies to be regulated to provide twelve months of comprehensive monitoring data on each of its final effluent streams. The data are to be obtained under a formal monitoring regulation which rigidly specifies quality assurance/quality control procedures, parameters for analysis and statistically-based analysis frequencies. The future MISA effluent limits regulation will then be based on this database.

V THE MINISTRY/OCM SECTOR DIALOGUE

The Ministry adopted an open consultative process both with industry and the public in developing the OCM Effluent Monitoring Regulation. Public input was available in the Regulation formulating process through the MISA Advisory Committee (MAC). Members of the committee were appointed by the Minister on the basis of their knowledge, concern and expertise in matters dealing with the environment.

A Joint Technical Committee (JTC) consisting of industry, Environment Canada and Ministry representatives served as the means for reaching consensus. A member of the MISA Advisory Committee also took part in the JTC discussions.

Agreement was reached with industry on principles which were to serve as general guidelines for the monitoring regulation. A multi-discipline group of Ministry/Environment Canada experts developed the general rationale for the site-specific monitoring requirements. A joint Ministry/Industry Regulation Writing team then produced the Regulation text for review by the JTC.

On the basis of the rationale and the databases available to the Ministry, the site-specific monitoring requirements were drawn up. The specific monitoring requirements were then reviewed with each plant site and modified where required.

VI APPROACHES TO ROUTINE MONITORING

The simplest monitoring approach both for implementation and regulation would have been to have a uniform requirement for all of the plant sites in the Sector. Although the OCM Sector in Ontario is made up of only nineteen plant sites, the sites produce a broad range of products (polyethylene to chlorinated hydrocarbons) and vary in size and complexity. Sites range from small, single product locations such as Novacor to large complexes such as Dow Chemical, manufacturing more than 20 products. Based on these conditions, monitoring requirements that would be all-encompassing and yet would be equitable for the smallest plant site could not be established.

Subcategorization of the plants according to some common attributes such as process chemistry, raw and treated wastewater characteristics or other plant-specific factors so that a uniform monitoring schedule could be set for a given subcategory was the next logical approach. Subcategorization can be a useful and efficient method of grouping plants to reduce the number and complexity of monitoring schedules while at the same time allowing some specificity.

Subcategorization schemes considered included grouping by:

- generic process;
- product;
- treatment;
- effluent contaminants;
- geographical location;
- large complexes/small plants;
- polymer/non-polymer;
- chlorinated/non-chlorinated organics/resins/fibres;
- thermosets/thermoplastics/fibres/organics;
- U.S. EPA seven subcategory scheme for BPT.

The subcategorization of the diverse and complex plants into the above homogeneous groups was deemed to be inequitable or impractical. The small number of plants and the inability to deal with multi-process/product sites which produce products in virtually all of the subcategories doomed the subcategorization approach.

In the end, it was concluded that the most cost effective and practical monitoring approach would be through effluent-specific schedules for each plant site.

VII THE EFFLUENT-SPECIFIC MONITORING APPROACH

For each plant site in the OCM Sector, effluent-specific monitoring schedules were developed. Conventional as well as priority pollutants were assigned for monitoring on the basis of their presence and their concentrations in the respective site effluents as determined from historical and current monitoring data available to the Ministry. In addition, supplemental data on raw materials, by-products and products were also used for parameter assignments. Thus, in keeping with the diversity of the plants in the sector, the routine monitoring requirements for specific parameters would be different for each effluent but would reflect the high probability of finding those parameters in

that effluent.

Included in the effluent-specific monitoring schedules were requirements for toxicity testing using both the fish (Rainbow trout) and Daphnia magna acute lethality toxicity tests on all final discharges from OCM Sector plants.

VIII PARAMETERS FOR ROUTINE MONITORING

The priority pollutants assigned for routine monitoring of specific effluents were obtained from the OCM Sector List. This list is a subset of the Ontario Effluent Monitoring Priority Pollutants List (1987) (EMPPL).

The derivation of the EMPPL is fully documented in a Ministry report dated July 1988 (19). The EMPPL includes chemicals detected in Ontario municipal and industrial effluents and Ontario's waterways which pose a hazard to the receiving environment because of their toxicity and persistence. The potential presence of a chemical based on use and manufacturing data could also have placed it on EMPPL. The EMPPL currently lists 179 chemicals. New chemicals identified in Ontario effluents and waterways will be assessed under EMPPL criteria and, if warranted, placed on the EMPPL on an ongoing basis.

The OCM Sector List includes all of the 133 compounds on the current EMPPL for which validated analytical test protocols exist, with the exception of the deletion of the resins acids group as they are not an OCM Sector product. No other editing of EMPPL has taken place to arrive at the OCM Sector List.

Table 2 in the Appendix lists all of the 179 chemicals on the current EMPPL. Chemicals with no validated analytical test protocols are shown in bold print in the table.

In addition to the priority pollutants on the OCM Sector List, monitoring under the regulation also includes conventional pollutants. Table 3 in the Appendix shows the conventional pollutants and the OCM Sector List priority pollutants arranged by analytical test groups. The pollutants form the basis for monitoring in the OCM Sector.

Once the routine monitoring parameters were decided upon, a frequency of monitoring had to be developed. On the basis of the end use of the data, a comprehensive rationale was developed to provide rules for the assignment of the OCM Sector parameters to daily, thrice weekly, weekly and monthly monitoring categories. The general and specific parameter/frequency assignment rules are discussed in sections XII and XIII.

To make the concept of effluent-specific monitoring workable in the regulation required a priori information on chemicals found or likely to be found in specific effluents. To provide this monitoring database, a pre-regulation effluent characterization program for each plant site in the sector was agreed upon by the Ministry and the plants.

IX DATABASES USED FOR PARAMETER SELECTION

The major source of information on the presence and concentration of

conventional pollutants and the OCM Sector List chemicals in the Sector effluents was the pre-regulation effluent characterization data. Each site analyzed many of its effluent streams for four 24 hour periods for the U.S. EPA 126 priority pollutants list and standard conventional parameters. Most plant sites also monitored their intake water for the same list of parameters. Use was made of the EPA priority pollutants list because the EMPPL was not available at the start of the pre-regulation characterization program. The data were collected in the period from December 1986 to August 1987.

The Ministry also obtained its own 24 hour composite samples as part of the pre-regulation program on one of the days that each plant site was collecting its pre-regulation samples. In addition to its comprehensive analysis for conventionals, metals and organics, the Ministry ran open characterization (gas chromatographic/mass spectrometric analysis) analyses on the samples to identify compounds not currently on the EMPPL. A limited number of companies in the Sector also provided open characterization of their effluents, but at a lower level of accuracy.

In response to a Ministry questionnaire (20), the Sector companies also provided, as part of the pre-regulation program, comprehensive site data on operations including raw material and product lists, wastewater treatment and current monitoring programs.

The pre-regulation monitoring and raw material usage data was combined with additional databases including:

- IMIS (Industrial Monitoring Information System);
- NIAMIS (Niagara River Monitoring Information System);
- pilot site studies (documented in the St. Clair River MISA Pilot Site Investigation - November 1987; St. Lawrence River Environmental Investigations - February 1988);
- MOE historical survey data (1980 to present);
- MOE regional reports;
- Environment Canada/U.S. EPA Priority Pollutant Survey (i.e. Upper Great Lakes Connecting Channel Study (UGLCCS) (Draft));
- company submitted monitoring and site operations data;
- U.S. EPA master process file (list of contaminants by generic processes) (21);
- best professional judgement (BPJ) based on knowledge of process chemistry, products, by-products, catalysts and raw materials for each site.

X CLASSIFICATION OF EFFLUENTS

Unlike the Petroleum Refining Sector where process wastes are segregated and biologically treated at each of the plants, the OCM Sector has many unsegregated streams where process effluents are mixed with spent once-through cooling water before being discharged to the environment. This blend of process and cooling water was defined as a combined effluent stream.

The effluent streams in the OCM sector were placed in one of the following classifications:

- process effluents;
- combined effluents;
- batch discharges;
- once-through cooling water;
- storm water;
- waste disposal site effluent;
- emergency overflows.

In addition, process effluent, combined effluent and batch discharge effluent streams which entered a watercourse directly were deemed as final discharge streams for the purpose of specifying continuous monitoring of some key parameters and for toxicity testing.

XI FLOW MEASUREMENT

Process effluents, combined effluents and batch discharges have the greatest potential for impacting the environment and as such, for the purposes of the monitoring frequencies, were treated identically, both having daily, thrice weekly, weekly and monthly monitoring requirements. The only difference between the two stream types for monitoring purposes was the softening of the flow accuracy requirements from $\pm$7% for process effluents to $\pm$20% for combined effluents and batch discharges. The process flow measurement accuracy requirement was further broken down to be $\pm$5% of the actual flow for the primary device and $\pm$2% of full scale flow for the secondary flow measuring device.

The rationale for the allowance is reflected in the fact that combined effluent streams generally have a very large once-through cooling water component and no in-place flow measurement. The $\pm$20% accuracy requirement would allow the use of flow estimation and avoid costly installation of flow devices on streams which in all likelihood would, at the end of the monitoring regulation, be segregated into separate process streams routed for treatment and much larger once-through cooling water streams only requiring flow measurement accuracy of $\pm$20%.

XII PARAMETER/FREQUENCY ASSIGNMENT - GENERAL RULES

Four basic frequencies of routine monitoring are required in the OCM Regulation - daily, thrice weekly, weekly and monthly. Continuous monitoring is the stated preferred method of daily monitoring at final discharge sampling points for 3 parameters - pH, DOC and specific conductance.

The lowest frequency of routine monitoring, once per month, is specified for once-through cooling water, storm water and waste disposal site effluent.

Once-through cooling water is designed not to contact process and therefore should have virtually no impact on the environment. Monthly monitoring is intended for the detection of long-term leaks. Storm water, because of the intermittent nature of its discharge and relatively low volume, also did not

warrant more frequent monitoring. Similarly, waste disposal site effluent is storm event driven so that monthly monitoring appeared adequate. Emergency overflows are to be monitored at the time of discharge.

The development of the effluent-specific monitoring schedules was based on the following general rules:

* the monitoring frequency for a given parameter is a function of parameter type, concentration and stream classification;

* all sites must monitor for a set of core parameters on all effluents, i.e. pH, DOC, specific conductance, TSS, total phosphorus and oil and grease;

  - the core parameters would reflect the general minimum level of environmental control at the plants and would be useful for plant comparisons.

  - the diversity of the Sector precluded the use of any of the priority pollutants as sector-wide core parameters.

* at all final discharge sampling points pH, DOC and specific conductance must be monitored. Continuous on-line analysis is preferred;

  - a continuous record of general site and control performance and uninterrupted real time information of general plant effluent impacts will be available.

* sites with biological treatment must monitor for volatile suspended solids (VSS), total phosphorus and nitrogen (TKN, NH_3, Nitrates + Nitrites);

  - the parameters are indicators of treatment plant performance.

* if one member of an analytical test group was detected above the Ministry analytical method detection limit (MDL), the whole test group was included for monthly monitoring;

  - a conservative approach was adopted to ensure as comprehensive a database for monitoring as possible.

  - analytical test groups comprise similar or homologous compounds so that the presence of one member is quite likely an indicator that other group members could be present.

* all additional parameters (both conventional and from the OCM Sector List) were assigned on a site and effluent-specific basis;

  - priority pollutants found at concentrations above recognized long term median values (shown in Table 4 of the Appendix from U.S. facilities with BATEA currently in place) were monitored at higher frequencies than those with concentrations below the long term medians.

* selection of parameters for monitoring for effluent streams other than process and combined effluents reflected process chemical usage in the

stream source areas;

* when assigning monitoring frequencies consideration was given to parameters when found in the intake water at the same levels as in the effluent when best professional judgement indicated that the parameters were not produced at the site;

  - a plant site was not required to monitor at a high frequency for compounds which passed through from the intake water.

* frequency reductions for key parameters under existing requirements or guidelines were generally avoided;

  - sites currently carrying out monitoring for key chemicals on the basis of long term plant historical needs maintained those frequencies.

* consideration was given for process changes since generation of any prior data;

  - changes in process operations, raw materials and catalysts since the generation of previous monitoring data might override the need for monitoring of a particular parameter if it was no longer being used or produced.

* best professional judgement was used for inclusion of raw materials and products in monitoring schedules based on high levels of use, even if none were found in the effluents above MDL;

* best professional judgement was used for increasing frequencies above baseline requirements for special situations;

  - a company treating third party wastes in a biological treatment plant would have a more stringent monitoring requirement.

These general rules are summarized in Table 5 of the Appendix.

XIII PARAMETER/FREQUENCY ASSIGNMENT - SPECIFIC RULES

A) PROCESS EFFLUENTS, COMBINED EFFLUENTS AND BATCH DISCHARGES (INCLUDING FINAL DISCHARGES)

1) Daily - pH, Dissolved Organic Carbon (DOC), Specific conductance, Volatiles Suspended Solids (VSS)

Continuous on-line analysis for pH, DOC and specific conductance is the preferred method of monitoring at all final discharges. Final discharges are defined as process effluents, combined effluents and batch discharge effluent streams discharging directly to a surface watercourse.

The continuous record would ensure that short term spills with their severe environmental potential did not go undetected. Average concentration levels do not give a true indication of instantaneous discharges and the damage to

the environment they can cause.

On-line instrumentation will:

- measure short term spikes-shock loads;
- allow determination of effluent variability by providing a clear picture of the variation of the recorded parameters with time;
- address the possibility of shock loads versus addressing average concentrations;
- provide shorter time lag between sampling and analysis than in manual sampling;
- eliminate problems resulting from storage of samples;
- allow the combination of automatic monitoring systems with an alarm system that will give advance warning when a high concentration of an undesirable parameter occurs.

A provision in the Regulation allows the taking of composite samples for all three parameters instead of using on-line analysis. However, on-line measurements are preferred.

Effluents from biological treatment plants will require monitoring for volatile suspended solids (VSS).

All process effluent, combined effluent and batch discharge effluent streams that do not discharge directly to a watercourse required daily analysis for pH, and specific conductance. Typically these streams discharge to other process effluent, combined effluent or once-through cooling water effluent streams on the site.

Daily parameter concentrations when multiplied by flow will provide daily loadings. These will be used to provide an estimate of operational variability and to establish the daily versus monthly variability to establish future daily limits in relation to monthly limits.

The reasons for selecting the monitoring parameters and a short description of what is measured under each test are summarized in point form.

<u>pH</u>

* a measure of the hydrogen ion concentration;
* a fundamental parameter which indicates the acidity level in an effluent;
* pH and pH changes may alter the toxicity of many materials to aquatic life;
* pH impacts the availability of nutrients for plants;

* low and high pH values cause corrosion and may make soluble metals dissolve from sludges and bottom sediments;

* PWQO require pH to fall within the range of 6.5 - 9.5 (receiving waters).

Dissolved Organic Carbon (DOC)

* a measure of overall soluble organic carbon loading to the environment;

* degradation of large amounts of organic matter in the receiving water causes depletion of the dissolved oxygen concentration impacting aquatic organisms and potentially producing septic conditions;

* advantage of a much lower detection limit at 0.5 mg/L over total organic carbon (TOC) at 5.0 mg/L;

* more likely to reflect trace organics than TOC, BOD5 or COD;

* BOD5,

  - measures only the easily biodegradable organic carbon but may also measure oxidizable nitrogen;

  - simulates the effect a waste will have on dissolved oxygen in the receiving waters;

  - has a long incubation time (5 days) and is sensitive to seed acclimation, dilution, pH, temperature and toxic substances;

* COD,

  - has a relatively high MDL of 10 mg/L;

  - also measures inorganic substances such as sulphides, sulphites, nitrites and metals; mercuric sulphate used to eliminate chloride interferences creates a disposal problem; potassium dichromate reagent may initiate violent reactions in some samples.

Specific Conductance

* indicator of the presence of dissolved inorganic salts which can impact aquatic organisms.

Volatile Suspended Solids (VSS)

* measure of the organic biological floc associated with biological treatment systems;

* measure of the performance of the separation equipment (clarifier or dissolved air flotation) used in removing organic solids in biological treatment systems;

* biological floc can be a carrier by adsorption for metals and the less volatile organics such as the polyaromatic hydrocarbons (PAH);

* a component of total suspended solids (TSS).

2) Thrice Weekly

The thrice weekly frequency was required to provide a statistically supportable twelve data points for calculating monthly averages for both conventional and priority pollutants. Sample sizes smaller than twelve may lead to unrepresentative data and may fail to show the true variability of the data.

In all cases for the same mean and standard deviation, the 95th percentile confidence limits will be narrowed about the mean with increasing sample size i.e. larger sample sizes yield less variable estimates of the mean.

Use of fewer than twelve samples may lead to unrealistically tight effluent limits in the future. This in turn may lead to unnecessary capital expenditure. If, on the other hand, the limits are set too high, then the full benefits of the MISA regulations will not be realized.

It is in the interest of all that limits be based on a large representative database with good QA/QC standards.

The thrice weekly monitoring data will be used to:

- calculate monthly loadings and concentrations;

- provide a record of parameter variability including manufacturing process load variations, treatment plant upsets and spills;

- establish a basis of comparison for parameters monitored at other frequencies;

- aid in identifying parameters that require control and point to appropriate treatment technology;

- provide a basis for comparison of plants within the sector;

- establish a basis for inter-sector comparison of loadings for these parameters;

- aid in identifying well-operated plants which consistently control toxic contaminants and which could be considered as benchmarks for designation of BATEA technologies;

- establish the performance of plants in comparison to BATEA designated plants and to U.S EPA reference limits;

- establish the need for controlling monitored parameters;

- provide a basis for altering the monitoring frequencies;

- relate discharges to water quality impacts.

i) Conventional Pollutants

The conventional pollutants chosen for thrice weekly monitoring serve as general indicators of a plant's impact on the environment. In specific cases, these parameters can also indicate treatment plant performance.

Dissolved Organic Carbon - see comments under Daily

Total Organic Carbon (TOC)

* required whenever TSS concentration is greater than 15 mg/L to ensure that the significant particulate organic component is not missed as would be the case by doing DOC only;

* a relatively high detection limit of 5 mg/L precludes its general use in place of DOC;

* measures most of the oxidizable organic carbon including the organic chemicals not oxidized in BOD5 tests;

* a measure of both particulate and dissolved organic carbon;

* may be related to BOD5 for a given waste effluent;

* indirect measure of the oxygen required to assimilate the biodegradable portion of the waste.

Total Suspended Solids (TSS)

* gross measure of suspended material including volatile suspended solids (organic) and inorganic materials;

* organic fractions may include grease, oils, fibres, microorganisms and dispersed insoluble organic compounds;

* inorganic materials include sand, silt, clay and insoluble metal compounds;

* measure of the effectiveness of treatment system separation equipment;

* may be a substrate for toxic contaminants which can leach out in water;

* may increase turbidity of water reducing recreational value;

* may impair photosynthetic activity of aquatic plants;

* can form sludge banks on settling leading to localized anaerobic conditions;

* may kill fish by clogging gills.

Ammonia plus Ammonium (Total ammonia)

* a measure of both ionized and un-ionized ammonia in effluents;
* ammonia is toxic to fish at levels above 0.02 mg/L (un-ionized);
* the concentration of ammonia in its un-ionized state varies with pH and temperature;
* 10 mg/L of total ammonia (approx. equivalent to 0.04 mg/L of un-ionized NH_3 (pH = 7; T = 20 degrees C) in the effluent was selected as the concentration requiring thrice weekly monitoring;
* MOE recommends 0.5 mg/L NH_3 (total) as the upper limit for raw water supplies and 0.02 mg/L of un-ionized NH_3 for the protection of aquatic life.

Total Kjeldahl Nitrogen (TKN)

* a measure of both organic nitrogen and total ammonia;
* measure of nitrification in biological treatment plants;
* may present an oxygen demand on the receiving water through nitrification;
* potential nutrient leading to growth of undesirable aquatic plants.

Oxidized Nitrogen (Total Nitrates + Nitrites)

* measures total oxidized nitrogen (nitrate + nitrite);
* measure of denitrification in biological treatment plants with nitrification;
* Ministry drinking water objectives limit $NO_3 + NO_2$ to 10 mg/L;
* levels of NO_3 above 10 mg/L in drinking water can impact hemoglobin in children leading to infantile methemoglobinemia.

Total Phosphorus (Total P)

* added to biological treatment systems as a nutrient to aid in biological growth;
* monitoring for phosphorus is required thrice weekly on all biological treatment effluent streams to determine its utilization in bio-treatment;
* phosphorus discharges to the Great Lakes are identified as a concern in the Canada-U.S. Great Lakes Water Quality Agreement.

Phenolics (4AAP)

* the 4-amino antipyrine (4AAP) method measures total phenolics;
* tend to be ubiquitous contaminants and are thus good indicators of pollution severity;
* can be general indicators of treatment;
* can taint fish flesh at levels as low as 1 ug/L.

Sulphides

* required in site-specific situations as dictated by usage;
* hydrogen sulphide is toxic to aquatic life (a function of temperature, pH and dissolved oxygen).

ii) Priority Pollutants

An analytical cut-off value was used to determine the thrice weekly frequency assignments for priority pollutants. Priority pollutants found in the databases available to the Ministry at concentrations above the medians of the long-term weighted means (LTM) listed by the U.S. EPA for BATEA facilities (Table 4 in the Appendix) were placed in the thrice weekly monitoring category. Where LTM values were unavailable, use was made of Ministry PWQO.

The data in Table 4 of the Appendix was published in the July 17, 1985 U.S. Federal Register and represents actual performance data for plants with BATEA (biological treatment) and in-plant control technologies.

OCM Sector plants not meeting the levels in Table 4 would likely require additional or more efficient treatment technologies. The thrice weekly data would provide statistically valid monthly averages on which to base future decisions.

Sector plants with in-place treatment would, through this thrice weekly data, demonstrate their performance in comparison to U.S. EPA BATEA.

This data would provide a statistically valid monthly average and variability calculation for compounds which would, in all likelihood, be regulated under the effluent limits regulation.

In special cases, where priority pollutants were currently being monitored on a daily basis, the daily frequency was retained. As an example, total lead is monitored daily in the effluent of one sector plant and this has been retained.

3) Weekly

Weekly monitoring requirements are an economic and technical compromise between thrice weekly and monthly data. The weekly monitoring frequency will be inadequate for derivation of limits data but will provide estimates of both concentrations and loadings which will assist in defining any future

monitoring requirements.

i) Conventional Pollutants

Weekly monitoring data for conventional pollutants will be used to determine the need for further monitoring for a given compound and to establish the appropriate monitoring frequency to allow the generation of data for future limits setting and control.

Weekly data will also be used to provide estimates of both monthly and longer term loadings for reporting to other jurisdictions.

Total Phosphorus (Total P)

* required weekly on all final discharges to provide estimates of monthly average loadings to the International Joint Commission (IJC);

* required weekly for process and combined effluents only if the concentration in the MOE databases exceeded 100 ug/L (approx. 3 x 30 ug/L guideline for rivers and lakes to avoid nuisance plant growth).

Oil & Grease (Solvent Extractables)

* measure of the gross hydrocarbon that could produce a visible film, sheen or discolouration on the surface of a watercourse;

* substances measured may include hydrocarbons, fatty acids, soaps, fats, oils and waxes;

* measure of groups of substances whose common characteristics is their solubility in Freon TM or hexane;

* can cause tainting of edible aquatic organisms;

* can cause odour and taste problems in drinking water;

* may form deposits on shorelines and bottom sediments;

* oil slicks prevent the full aesthetic enjoyment of water;

* can be a carrier for other toxic contaminants;

* fish and water fowl are adversely affected by oils;

* crude oil at 0.3 mg/L can be toxic to freshwater fish.

ii) Priority Pollutants

Priority pollutants, listed in the OCM Sector List in Table 3 of the Appendix, which were found at least once in the databases available to the Ministry above the Ministry MDL but below the long-term weighted means listed by the U.S. EPA for BATEA facilities (Table 4 in the Appendix) were placed in the

weekly monitoring category.

The weekly priority pollutant data will be used to:

- verify the presence or absence of the compounds;
- provide estimates of the concentrations and variability of the compounds for comparison with BATEA performance levels to evaluate the need for control of these compounds;
- determine the need for further monitoring for a given compound and to establish that frequency.

In cases where off-site third party wastes are treated in biological treatment plants, weekly monitoring of a long list of priority pollutants is required to ensure that potential impacts are not missed.

4) Monthly

Monthly monitoring of relatively long lists of parameters is required to establish the presence or absence of contaminants of concern. The concentration data will also be used in conjunction with flow measurement data to calculate loadings for each of the compounds detected.

The monthly monitoring will also provide relevant chemical analysis data for the interpretation of the toxicity test results.

Any one contaminant found above the MDL in an effluent triggered the assignment of the whole analytical test group for monthly monitoring.

In this way, the possibility of detecting similar compounds was selectively increased on the basis of at least one detection of an analytical test group member without the need to analyze for all of the other analytical test groups at a greater frequency for each effluent each month.

Knowledge of raw material usage, by-products, and products could also initiate monthly monitoring even if the parameters did not appear in the databases examined by the Ministry staff.

Based on the above rationale, any one or all of the following analytical test groups could be specified for monthly monitoring on an effluent specific basis:

*	Group 2	Cyanide;
*	Group 9	Total Metals;
*	Group 10	Hydrides;
*	Group 11	Chromium (Hexavalent);
*	Group 12	Mercury;
*	Group 13	Total Alkyl Lead;
*	Group 16	Volatiles, Halogenated;
*	Group 17	Volatiles, Non-Halogenated;
*	Group 18	Volatiles, Water Soluble;
*	Group 19	Extractables, Base Neutral;
*	Group 20	Extractables, Acid (Phenolics);
*	Group 23	Extractables, Neutral Chlorinated;

* Group 24 Chlorinated Dibenzo-p-dioxins and Dibenzofurans;
* Group 27 PCBs.

Phthalates, included in analytical test group 19, were not included for monitoring at frequencies other than monthly because they were generally considered to be laboratory artifacts. They often appeared in both intake and effluent results in the databases available to the Ministry.

To allow a determination of any intake water contaminant impact on the final effluents, plants were encouraged to analyze their intake water for the same parameters as the longest parameter list for that site's effluents. These samples would have to be collected and analyzed using the sampling and analytical protocols specified for all other effluent streams.

C) ONCE-THROUGH COOLING WATER (OTCW)

For the OCM Sector, OTCW will be monitored on a monthly basis for a list of parameters specific to the process block or area from which the OTCW originated.

All OTCW is to be monitored for pH, DOC, total phosphorus, specific conductance, TSS and oil and grease to ensure that no long term gross leaks exist from the process side. In addition, specific priority pollutant groups were also be required on a site-specific basis to ensure that there were no low level losses.

D) STORM WATER AND WASTE DISPOSAL SITE EFFLUENT

The purpose of monitoring these streams is to provide an estimate of the impact on receiving water from storm water or waste disposal site effluent loadings in relation to process discharges to determine whether more intensive monitoring or corrective action may be required in the future.

In the OCM Sector, the majority of the plant sites have no storm water or waste disposal site effluent collection systems. Storm water will be monitored for at least one storm event per month or at such a frequency as to provide 12 data points in a year. Failure to monitor a storm event in a given month will require doubling up for the next month. Waste disposal site effluent must be monitored at the time of discharge or once a month, whichever is less.

There is also the requirement that at least 2 of the 12 data points for storm water discharges be obtained in the winter or spring months during periods of thaw. This will provide some insight into the potential for contamination from runoff during the winter.

The list of parameters to be monitored has been set out in site-specific schedules and is related to the parameters monitored in process streams.

E) EVENT MONITORING - EMERGENCY OVERFLOWS

Emergency overflows are process effluent, combined effluent or batch discharges which by-pass their intended destination because of unforeseen emergencies and end up going directly to a surface watercourse.

The purpose of monitoring emergency overflows is to estimate the impact on the environment and to record the number of such occurrences for possible remedial action.

The parameters to be monitored are set out in the site-specific monitoring schedules and are based on what would normally be present in the streams if there was no overflow.

XIV CHARACTERIZATION

Characterization is the quantitative determination of a specified number of conventional pollutants and all of the compounds on the OCM Sector List using the analytical techniques specified in the General Effluent Monitoring Regulation.

The characterization list for the OCM Sector is shown in Table 3 of the Appendix. It consists of fifteen conventional parameters and 133 OCM Sector List parameters. The latter total represents all of the EMPPL parameters for which validated analytical protocols currently exist.

The primary purpose of characterization is to establish the presence or absence of the listed parameters in all of the OCM Sector process effluents, combined effluents and batch discharges. Characterization data and flow information may also be used to provide estimates of annual loadings for all parameters for comparison among the MISA sectors.

Characterization data may also indicate if a change of monitoring frequency may be required for a given parameter. This may lead to more intensive monitoring or eventual delisting of a given compound from the OCM Sector List.

In order to determine the appropriate frequency for characterization, use was made of statistical analyses. The requirements for characterization took into account the four industry pre-regulation characterization data and the Ministry audit characterizations - one during the pre-regulation period and two to be done within the regulation period. Thus, a potential for seven characterizations was in place to which would be added the regulation requirements.

From the statistical data shown in Table 6 of the Appendix, it is clear that for a given parameter that is present 50% of the time or greater in an effluent, the probability of finding the contaminant is very high and virtually the same whether eleven samples (99.9% probability) or four samples (93.7% probability) are taken.

For a given parameter that is present infrequently such as 2% of the time, characterizing eleven samples provides only a 19.9% chance of detecting the parameter. Nine samples would provide only a slightly reduced probability of 16.6%. However, this should be considered in the context that a parameter appearing only 2% of the time is less likely to cause a major environmental impact than one appearing 50% of the time. The biggest unknown in attempting to determine the appropriate characterization frequency is the a priori probability of a parameter's presence in an effluent.

A review of the OCM Sector plant operations was carried out with a view to subgrouping the plants to reduce the costs of characterization without a significant sacrifice in technical data.

The OCM Sector, for the purposes of characterization, was sub-divided into two groups: Group A - simple process sites and Group B - moderate/complex process sites. The assignment was based on consideration of the following factors:

- process/site complexity;
- process variability;
- product/raw material type;
- available data base;
- site located in area of concern;
- past and current environmental performance.

Table 7 of the Appendix lists the plants in each of the A and B groups.

For the OCM Sector, Group A companies (Table 7) are to characterize their process and combined effluents semi-annually while Group B companies are to do theirs quarterly. When combined with the pre-regulation characterization data and the Ministry audit data, the Regulation characterization requirements would provide a total of nine and eleven characterization data sets for companies in Groups A and B, respectively. With these number of samples, the data in Table 6 indicate that the probability of detecting a frequently occurring parameter (one in two to one in five) would be no worse than 86.6% and could be as high as 99.9%.

In cases where a plant in Group A provided less than four days of pre-regulation characterization data, the regulation requirement for characterization was increased from two to four.

A distinction was made between the characterization requirements for analytical test group 24 (chlorinated dibenzo-p-dioxins and dibenzofurans) and the remaining OCM Sector List parameters.

Because of the high cost of analysis for analytical test group 24 and the low probability of the presence of the group members in OCM Sector effluents, plant sites which submitted four analyses for group 24 in the pre-regulation effluent characterization program were only required to characterize their effluents for group 24 in the regulation semi-annually. However if less than four days of data were submitted, quarterly monitoring for group 24 was required in the regulation period although the plant might be in the Group A category requiring semi-annual characterization.

The characterization requirements in the regulation were augmented by requiring open characterization of the effluents at the same frequencies as the characterizations.

XV OPEN CHARACTERIZATION

Open characterization will provide tentative identification of both organic

compounds and inorganic elements that are not on the OCM Sector List. Use is made of gas chromatography/mass spectrometry (GC/MS) and inductively coupled plasma procedures or atomic emission spectroscopy to obtain the data.

Open characterization will be used to identify parameters in process effluents, combined effluents and batch discharges not currently on EMPPL and will be used to provide candidate compounds for hazard assessment for potential addition to EMPPL. In this way, open characterization when combined with characterization data will provide a more relevant parameter list for future monitoring and control. The 1987 EMPPL does not cover all of the compounds that could be discharged from the OCM Sector plants because of the current lack of valid monitoring data to indicate the presence of compounds.

The relatively modest incremental cost of running open characterization in conjunction with characterization analysis and large pay back in data produced is a strong justification for coupling open scans with the OCM Sector characterization requirements.

The detection limit achievable for open characterization of organic compounds will depend upon the sample size, concentration factor, efficiency of extraction from the original matrix, GC/MS conditions, overall complexity of the sample, degree of chromatographic resolution from other co-extractives and the mass spectral characteristics of specific compounds. In some cases, compounds extracted from a 1.0 L sample may be identifiable at concentrations as low as 1 - 5 parts per billion (ppb). In other cases, identification may require concentrations of components to be 50 ppb or greater. In the majority of the cases, 10 - 20 ppb concentrations should be detectable.

It is the intention of the Ministry to identify as many compounds as possible that can be extracted (or purged) from the supplied inspection sample. A target detection limit for this work has been set as close to 1 ppb as possible on a sample to sample basis.

The protocols and procedures for analysis of the samples for open characterization will be published in a document produced by the Ministry's Laboratory Services Branch. This document will be available prior to this regulation coming into force. Chemical Abstract Service (CAS) numbers should be provided for all compounds identified under open characterization.

XVI TOXICITY TESTING

Toxicity testing requirements for the OCM Sector consist of both the fish toxicity test (Rainbow Trout Acute Lethality Test) and the Daphnia magna Acute Lethality Test as outlined in the published protocols entitled:

* "Protocol to Determine the Acute Lethality of Liquid Effluents to Fish" (22);

* "Daphnia magna Acute Lethality Toxicity Test Protocol" (23).

Since it is essential to protect all forms of aquatic life, it is critical that the impact of various effluents be assessed on as many different types of aquatic

organisms as is practical.

The Ministry has reviewed both Daphnia magna and rainbow trout test results on the same samples and concluded that Daphnia magna and trout differ in their sensitivity to some effluents and thus the addition of the Daphnia magna test will provide valuable additional information.

As a result of the lack of toxicity data for the Sector, it was decided to conduct both toxicity tests on final discharges to surface watercourses.

The monitoring frequency for toxicity testing on final discharges (which include process effluents, combined effluents and batch discharges) will be monthly for both tests. However, if the final discharge for three consecutive months using the rainbow trout acute lethality test incurs fish mortality for no more than 2 out of 10 fish at each dilution, then the rainbow trout test can be reduced to a quarterly frequency. Thus, non acutely lethal final discharges will still undergo 6 fish toxicity tests during the regulation period. The Daphnia magna test will be continued at a monthly frequency for the duration of the Regulation.

Both tests will be done on OTCW on a quarterly basis with the provision, however, that if the samples pass both acute lethality tests on the first sample (mortality no more than 2 out of 10 fish at each dilution) then the remaining quarterly testing can be done for both species on 100% undiluted effluent only. Serial dilutions will not be required. The probability of OTCW being non-toxic is extremely high so that it makes little economic sense to demand full dilution tests if the 100% OTCW is non-lethal.

pH Adjustment

pH adjustment will not be allowed on samples collected for the OCM Regulation for the following reasons:

- the Ministry needs to establish the actual toxicity level of the final discharges in the form of LC50 values to assist in future toxicity limit setting. The LC50 limits to be set will be based on those limits achievable using BATEA. The toxicity data will assist in defining the limit;

- pH adjustment simulates no condition that actually occurs in the environment;

- adjustment of pH may have an impact on modifying the toxicity of other compounds in the sample.

Final discharges with pH outside the Ministry guidelines of 6.5 to 9.5 will be tested using both the rainbow trout and the Daphnia magna toxicity tests without pH adjustment. While the undiluted effluent may be predictably lethal primarily due to pH alone, the series of dilutions required under the tests will isolate the pH effect and allow the calculation of an LC50 value.

Companies may, on a voluntary basis, where the pH is outside the range of the Ministry guidelines, perform toxicity tests on pH adjusted effluents in parallel with those on unadjusted effluents. Submission of data on pH adjusted samples

will be voluntary and will be used by the Ministry for comparison with the pH unadjusted sample results.

Use of Full Dilution Series vs. Full Strength (Pass/Fail) Tests

Pass/fail tests produce non-quantitative results. For some plants, it may not be possible for available technology to achieve an LC50 of 100%. Thus, doing full dilution series to determine an LC50 on an effluent will allow the option of selecting a technically sound final toxicity criteria instead of using only pass/fail.

For effluent samples that are non-lethal at full strength, additional information is rarely obtained from the dilutions in a full series LC50. However, the non-lethality of the sample is never known with 100% certainty in advance of starting the test.

If a pass/fail test fails, there are only two ways of obtaining an LC50 value. First, the full series LC50 test could be performed on the same sample after the pass/fail test is complete. This would be unsatisfactory because, given that 96 hours is the minimum time necessary to provide a measure of acute lethality for trout, by the time the series dilutions were started the sample would be at least 4-6 days old. This is unacceptably long for a perishable sample.

Collecting a totally new sample for the LC50 series after the original sample has failed a pass/fail test is also unacceptable because it will be collected at an entirely different time.

XVII QUALITY ASSURANCE/QUALITY CONTROL

Quality assurance and quality control (QA/QC) encompasses all of the procedures undertaken to ensure that data produced are generated within known probability limits of accuracy and precision.

Quality assurance is the overall verification program which provides producers and users of data the assurance that predefined standards of quality at predetermined levels of confidence are met. Quality assurance is comprised of two elements: quality control and quality assessment.

Quality control is the overall system of guidelines, procedures and practices which are designed to regulate and control the quality of products or services with regards to previously established performance criteria and standards.

Quality assessment is the overall system of activities which ensure that quality control is being performed effectively. This is carried out immediately following quality control and involves evaluation and auditing of quality control data to ensure the success of the quality control program.

QA/QC is one of the most important aspects of the MISA monitoring regulations. The QA/QC program includes many small but essential activities ranging from proving the cleanliness of sample bottles, using proper sampling equipment, containers and preservatives to instrument calibration; validation of authenticity of standards, inclusion of blanks, spikes and controls in analytical

runs to documenting performance; participation in external round-robins to defining the proper method for reporting a final data number. Omission of one of these activities can lead to unreliable data resulting in improper conclusions and perhaps inappropriate actions.

The financial stakes riding on the monitoring regulation data are too high to compromise the generated date with inadequate QA/QC.

XVIII ECONOMIC IMPLICATIONS OF THE REGULATION

The monitoring and abatement requirements under the MISA program will require both operating and capital expenditures. The Policy and Planning Branch of the Ministry has produced two reports which assess the economic environment of the OCM Sector and analyze the financial implications of the incremental costs of monitoring imposed by the MISA monitoring requirements.

The first report entitled "Economic Profile of the Organic Chemical Manufacturing Sector" (24) summarizes the key features of the organic chemical manufacturing sector in Canada and in Ontario. Its purpose is three-fold:

- to establish general financial profiles of the companies in the sector;
- to assess the competitiveness of the sector in global and domestic contexts;
- to assess the factors which may have a bearing on the future outlook and long term viability of the sector.

The report concludes that the financial health of the OCM Sector is positive - a benefit from the current positive business cycle. The medium and future-term outlooks are also positive, with the sector likely to enjoy relatively lower feedstock prices and high demand for products.

The second report entitled "Ontario's Organic Chemical Manufacturing Sector - Monitoring Cost Estimates" (25) presents estimates and implications of the incremental costs to the OCM Sector of the monitoring regulation requirements.

The estimated total incremental operating costs based on the effluent-specific schedules for the nineteen plants in the OCM Sector by specific monitoring function are summarized as follows:

Sampling/Flow	$1.1 million
Characterization	$0.6 million
Routine Monitoring	$4.3 million
Toxicity Testing	$0.3 million
Reporting	$0.4 million

The total incremental operating costs are estimated to be $6.7 million. An additional $2.2 million has been estimated for capital costs for a total cost of $8.9 million. Two plants account for almost 47% of the total costs while the median cost for all nineteen plants is $244,000.

The costs are point-estimates and may be overestimates or underestimates. For example, the assumption that the analyses will be done by commercial laboratories may overestimate costs since many plants have in-house analytical capabilities. Conversely, these costs could be underestimates if the transportation costs incurred are higher than those assumed in the report.

Another potential cost overestimate may occur because the current cost estimates do not break down the prices charged by commercial laboratories for analytical test groups 16 to 18. Requiring the monitoring for only one compound in any one of the these groups has been priced as if all compounds in all groups are to be analyzed.

If the regulation had required a common monitoring list for all effluents, the operating costs for routine monitoring would have been approximately $16.5 million rather than $4.3 million. The difference in the costs represents a savings of $12.2 million and is a measure of the cost-effectiveness of the effluent-specific approach used with the OCM Sector.

The above costs do not include the costs of current monitoring programs which would be superceded by the OCM Regulation. The OCM Sector has estimated current costs of monitoring to be about $1 million,

The economic impacts of the estimated monitoring costs on the OCM Sector are small in relation to aggregate sectoral financial indicators. For individual OCM Sector firms subject to MISA monitoring requirements, impacts are varied but do not seem to be unduly burdensome. Impacts on average after-tax profits (between 1983 and 1987) range from 0.1% to 2.9%.

The monitoring requirements will produce benefits in the form of enhanced employment opportunities, technology development and the establishment of a sufficient data base from which cost-effective control programs can be derived.

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APPENDIX

TABLE 1 - STANDARD INDUSTRIAL CLASSIFICATION (SIC) CODES FOR THE ORGANIC CHEMICAL MANUFACTURING SECTOR

CANADA

MAJOR GROUP CLASS	SIC	NAME
15		**Rubber Product Industries**
	1511	Tire & Tube Industry
	1521	Rubber Hose & Belting
	1599	Other Rubber Products Industries
16		**Plastic Product Industries**
	1611	Formed & Expanded Plastic Product Industry
	1621	Plastic Pipe & Pipe Fittings Industry
	1631	Plastic Film & Sheeting Industry
	1691	Plastic Bag Industry
	1699	Other Plastic Product Industries
17		**Leather & Allied Products Industries**
	1711	Leather Tanneries
18		**Primary Textile Industries**
	1811	Man-made Fibre & Filament Yarn Industry
	1829	Other Spun Yarn & Woven Cloth Industries
19		**Textile Product Industries**
	1992	Contract Textile Dyeing & Finishing Industry
	1995	Tire Cord Fabric Industry
37		**Chemical & Chemical Products Industries**
	3712	Industrial Organic Chemical Industries
	3729	Other Agricultural Chemical Industries
	3731	Plastic & Synthetic Resin Industry
	3751	Paint & Varnish Industry
	3761	Soap & Cleaning Compounds Industry
	3791	Printing Ink Industry
	3792	Adhesives Industry
	3799	Other Chemical Products Industries, Not Elsewhere Classified

UNITED STATES

	2865	Cyclic (Coal Tar) Crudes and Cyclic Intermediates, Dyes and Organic Pigments (Lakes & Toners)
	2869	Industrial Organic Chemicals, Not Elsewhere Classified
	2821	Plastics Materials, Synthetic Resins and Nonvulcanizable Elastomers
	2823	Cellulosic Man-made Fibres
	2824	Synthetic Organic Fibres, Except Cellulosic
	2822	Synthetic Rubber (Vulcanizable Elastomers)

TABLE 2 - EFFLUENT MONITORING PRIORITY POLLUTANTS LIST (EMPPL) (1987)

EMPPL PARAMETERS	CAS #	ANALYTICAL TEST GROUP #
Abietic Acid	514-10-3	-
Acenaphthene	83-32-9	19
Acenaphthene, 5-nitro	602-87-9	19
Acenaphthylene	208-96-8	19
Acridine	260-94-6	-
Acrolein	107-02-8	18
Acrylonitrile	107-13-1	18
Aluminum	7429-90-5	9
4-Aminoazobenzene	60-09-3	-
Aniline	62-53-3	-
Anthracene	120-12-7	19
Antimony	7440-36-0	10
Aroclor 1016 (PCB)	12674-11-2	27
Aroclor 1221 (PCB)	11104-28-2	27
Aroclor 1232 (PCB)	11141-16-5	27
Aroclor 1242 (PCB)	53469-21-9	27
Aroclor 1248 (PCB)	12672-29-6	27
Aroclor 1254 (PCB)	11097-69-1	27
Aroclor 1260 (PCB)	11096-82-5	27
Arsenic	7440-38-2	10
Benzaldehyde	100-52-7	-
Benz(a)anthracene	56-55-3	19
Benzene	71-43-2	17
Benzeneacetonitrile	140-29-4	-
Benzidine	92-87-5	-
Benzo(b)fluoranthene	205-99-2	19
Benzo(k)fluoranthene	207-08-9	19
Benzo(g,h,i)perylene	191-24-2	19
Benzo(a)pyrene	50-32-8	19
Benzyl alcohol	100-51-6	-
Beryllium	7440-41-7	9
Biphenyl	92-52-4	19
Bromoform	75-25-2	16
Bromomethane	74-83-9	16
4-Bromophenyl phenyl ether	101-55-3	19
1,3-Butadiene	106-99-0	-
Butanal	123-72-8	-
Butylbenzylphthalate	85-68-7	19
Cadmium	7440-43-9	9
Camphene	79-92-5	19
Carbon tetrachloride	56-23-5	16
Chorinated dibenzofurans*	N/A	24
Chorinated dibenzo-p-dioxins*	N/A	24
Chlorobenzene	108-90-7	16
Chlorodehydroabietic acid	57055-38-6	-
Chlorodibromomethane	124-48-1	16
Chloroform	67-66-3	16
Chloromethane	74-87-3	16
Bis(2-chloroethoxy)methane	111-91-1	19

TABLE 2 - EFFLUENT MONITORING PRIORITY POLLUTANTS LIST (EMPPL) (1987)

EMPPL PARAMETERS	CAS #	ANALYTICAL TEST GROUP #
Bis(2-chloroethyl)ether	111-44-4	19
Bis(2-chloroisopropyl)ether	108-60-1	19
Bis(chloromethyl)ether	542-88-1	-
4-Chloro-3-methylphenol	59-50-7	20
1-Chloronaphthalene	90-13-1	19
2-Chloronaphthalene	91-58-7	19
o-Chlorophenol	95-57-8	20
4-Chlorophenylphenyl ether	7005-72-3	19
Chromium	7440-47-3	9
Chrysene	218-01-9	19
Cobalt	7440-48-4	9
Copper	7440-50-8	9
m-Cresol	108-39-4	20
o-Cresol	95-48-7	20
p-Cresol	106-44-5	20
Dehydroabietic acid	1740-19-8	-
Dibenz(a,h)anthracene	53-70-3	19
2,6-Di-t-butyl-4-methylphenol	128-37-0	-
Di-n-butylphthalate	84-74-2	19
1,2-Dichlorobenzene	95-50-1	16
1,3-Dichlorobenzene	541-73-1	16
1,4-Dichlorobenzene	106-46-7	16
3,3'-Dichlorobenzidine	91-94-1	-
1,1-Dichloroethane	75-34-3	16
1,2-Dichloroethane	107-06-2	16
Cis-1,2-Dichloroethylene	156-59-2	-
Trans-1,2-Dichloroethylene	156-60-5	16
1,1-Dichloroethylene	75-35-4	16
2,4-Dichlorophenol	120-83-2	20
2,6-Dichlorophenol	87-65-0	20
1,2-Dichloropropane	78-87-5	16
Cis-1,3-Dichloropropylene	10061-01-5	16
Trans-1,3-Dichloropropylene	10061-02-6	16
Bis(2-Ethylhexyl)phthalate	117-81-7	19
Dimethyl disulphide	624-92-0	-
2,4-Dimethylphenol	105-67-9	20
4,6-Dinitro-o-cresol	534-52-1	20
2,4-Dinitrophenol	51-28-5	20
2,4-Dinitrotoluene	121-14-2	19
2,6-Dinitrotoluene	606-20-2	19
1,4-Dioxane	123-91-1	-
Diphenylamine	122-39-4	19
Diphenyl ether	101-84-8	19
Ethylene dibromide	106-93-4	16
Ethylene thiourea	96-45-7	-
Eugenol	97-53-0	-
Fluoranthene	206-44-0	19
Fluorene	86-73-7	19
Formaldehyde	50-00-0	-

TABLE 2 - EFFLUENT MONITORING PRIORITY POLLUTANTS LIST (EMPPL) (1987)

EMPPL PARAMETERS	CAS #	ANALYTICAL TEST GROUP #
Hexachlorobenzene	118-74-1	23
Hexachlorobutadiene (HCBD)	87-68-3	23
Hexachlorocyclopentadiene	77-47-4	23
Hexachloroethane	67-72-1	23
Hydrazine	302-01-2	-
2-Hydroxybiphenyl	90-43-7	-
4-Hydroxybiphenyl	92-69-3	-
Indeno(1,2,3-cd)pyrene	193-39-5	19
Indole	120-72-9	19
Isopimaric acid	5835-26-7	-
Lead	7439-92-1	9
Levopimaric acid	79-54-9	-
Limonene	138-86-3	-
Mercaptobenzothiazole	149-30-4	-
Mercury	7439-97-6	12
Methylene chloride	75-09-2	16
Methyl ethyl ketone	78-93-3	-
n-Methylformamide	123-39-7	-
1-Methylnaphthalene	90-12-0	19
2-Methylnaphthalene	91-57-6	19
Methyl styrene	25013-15-4	-
Molybdenum	7439-98-7	9
Naphthalene	91-20-3	19
Neoabietic acid	471-77-2	-
Nickel	7440-02-0	9
1-Nitronaphthalene	86-57-7	-
2-Nitronaphthalene	581-89-5	-
4-Nitrophenol	100-02-7	20
n-Nitrosodimethylamine	62-75-9	-
n-Nitrosodi-n-propylamine	621-64-7	19
n-Nitrosodiphenylamine	86-30-6	19
Octachlorostyrene	29082-74-4	23
Oleic Acid	112-80-1	-
Pentachlorobenzene	608-93-5	23
Pentachlorophenol	87-86-5	20
Perylene	198-55-0	19
Phenanthrene	85-01-8	19
Phenol	108-95-2	20
Pimaric acid	127-27-5	-
Pyrene	129-00-0	19
Selenium	7782-49-2	10
Silver	7440-22-4	9
Styrene	100-42-5	17
Tetrachloroacetone	31422-61-4	-
1,1,3,3-Tetrachloroacetone	632-21-3	-
1,2,3,4-Tetrachlorobenzene	634-66-2	23
1,2,3,5-Tetrachlorobenzene	634-90-2	23
1,2,4,5-Tetrachlorobenzene	95-94-3	23
2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6	24

TABLE 2 - EFFLUENT MONITORING PRIORITY POLLUTANTS LIST (EMPPL) (1987)

EMPPL PARAMETERS	CAS #	ANALYTICAL TEST GROUP *
1,1,2,2-Tetrachlorethane	79-34-5	16
Tetrachloroethylene	127-18-4	16
Tetrachloroguaiacol	2539-17-5	-
2,3,4,5-Tetrachlorophenol	4901-51-3	20
2,3,4,6-Tetrachlorophenol	58-90-2	20
2,3,5,6-Tetrachlorophenol	935-95-5	20
Tetraethyl lead	78-00-2	13
Thallium	7440-28-0	9
Thiourea	62-56-6	-
Toluene	108-88-3	17
Tributyl phosphate	126-73-8	-
1,1,3-Trichloroacetone	921-03-9	-
1,2,3-Trichlorobenzene	87-61-6	23
1,2,4-Trichlorobenzene	120-82-1	23
1,1,2-Trichloroethane	79-00-5	16
Trichloroethylene	79-01-6	16
Trichlorofluoromethane	75-69-4	16
Trichloroguaiacol	61966-36-7	-
2,3,4-Trichlorophenol	15950-66-0	20
2,3,5-Trichlorophenol	933-78-8	20
2,4,5-Trichlorophenol	95-95-4	20
2,4,6-Trichlorophenol	88-06-2	20
2,4,5-Trichlorotoluene	6639-30-1	23
Triethyl lead	N/A	13
Trimethylbenzenes	25551-13-7	-
Trimethylnaphthalenes	28652-77-9	-
Vanadium	7440-62-2	9
Vinyl chloride	75-01-4	16
o-Xylene	95-47-6	17
m-Xylene	108-38-3	17
p-Xylene	106-42-3	17
Zinc	7440-66-6	9

*** Represents tetra-, penta-, hexa-, hepta-, and octa- congeners**

NOTE: MOE analytical methods are NOT currently available for parameters shown in bold print

Number of parameters with existing validated analytical methods	**133**
Number of parameters with no analytical methods	**46**
Total Number of EMPPL Parameters/Groups	**179**

TABLE 3 - ORGANIC CHEMICAL MANUFACTURING (OCM) SECTOR

CONVENTIONAL AND SECTOR PRIORITY POLLUTANT LIST (SHOWN BY ANALYTICAL TEST GROUPS)

CONVENTIONALS

ANALYTICAL TEST GROUP #	ANALYTICAL TEST GROUP NAME	PARAMETERS	CAS #s'
1	Chemical Oxygen Demand	Chemical oxygen demand (COD)	N/A*
2	Cyanide	Cyanide	57-12-5
3	Hydrogen ion (pH)	Hydrogen ion (pH)	N/A*
4a	Nitrogen	Ammonia plus Ammonium	N/A*
		Total Kjeldahl nitrogen	N/A*
4b		Nitrate + Nitrite	N/A*
5a	Organic carbon	Dissolved organic carbon (DOC)	N/A*
5b		Total organic carbon (TOC)	N/A*
6	Total phosphorus	Total phosphorus	N/A*
7	Specific conductance	Specific conductance	N/A*
8	Suspended solids	Total suspended solids (TSS)	N/A*
		Volatile suspended solids (VSS)	N/A*
14	Phenolics (4AAP)	Phenolics (4AAP)**	N/A*
15	Sulphide	Sulphide	N/A*
25	Solvent Extractables	Oil and grease	N/A*

TABLE 3 - ORGANIC CHEMICAL MANUFACTURING (OCM) SECTOR

CONVENTIONAL AND SECTOR PRIORITY POLLUTANT LIST (SHOWN BY ANALYTICAL TEST GROUPS)

SECTOR PRIORITY POLLUTANTS

ANALYTICAL TEST GROUP #	ANALYTICAL TEST GROUP NAME	PARAMETERS	CAS #s'
9	Total metals	Aluminum	7429-90-5
		Beryllium	7440-41-7
		Cadmium	7440-43-9
		Chromium	7440-47-3
		Cobalt	7440-48-4
		Copper	7440-50-8
		Lead	7439-92-1
		Molybdenum	7439-98-7
		Nickel	7440-02-0
		Silver	7440-22-4
		Thallium	7440-28-0
		Vanadium	7440-62-2
		Zinc	7440-66-6
10	Hydrides	Antimony	7440-36-0
		Arsenic	7440-38-2
		Selenium	7782-49-2
11	Chromium (Hexavalent)	Chromium (Hexavalent)	7440-47-3
12	Mercury	Mercury	7439-97-6
13	Total alkyl lead	Tetra-ethyl lead	78-00-2
		Tri-ethyl lead	Unavailable
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane	79-34-5
		1,1,2-Trichloroethane	79-00-5
		1,1-Dichloroethane	75-34-3
		1,1-Dichloroethylene	75-35-4
		1,2-Dichlorobenzene	95-50-1
		1,2-Dichloroethane (Ethylene dichloride)	107-06-2
		1,2-Dichloropropane	78-87-5
		1,3-Dichlorobenzene	541-73-1
		1,4-Dichlorobenzene	106-46-7
		Bromoform	75-25-2
		Bromomethane	74-83-9
		Carbon tetrachloride	56-23-5
		Chlorobenzene	108-90-7
		Chloroform	67-66-3
		Chloromethane	74-87-3
		Cis-1,3-Dichloropropylene	10061-01-5
		Dibromochloromethane	124-48-1
		Ethylene dibromide	106-93-4
		Methylene chloride	75-09-2
		Tetrachloroethylene (Perchloroethylene)	127-18-4
		Trans-1,2-Dichloroethylene	156-60-5
		Trans-1,3-Dichloropropylene	10061-02-6
		Trichloroethylene	79-01-6
		Trichlorofluoromethane	75-69-4
		Vinyl chloride (Chloroethylene)	75-01-4

TABLE 3 - ORGANIC CHEMICAL MANUFACTURING (OCM) SECTOR

CONVENTIONAL AND SECTOR PRIORITY POLLUTANT LIST (SHOWN BY ANALYTICAL TEST GROUPS)

SECTOR PRIORITY POLLUTANTS

ANALYTICAL TEST GROUP #	NAME	PARAMETERS	CAS #s'
17	Volatiles, Non-Halogenated	Benzene	71-43-2
		Styrene	100-42-5
		Toluene	108-88-3
		o-Xylene	95-47-6
		m-Xylene and p-Xylene	108-38-3
			& 106-42-3
18	Volatiles, Water Soluble	Acrolein	107-02-8
		Acrylonitrile	107-13-1
19	Extractables, Base Neutral	Acenaphthene	83-32-9
		5-nitro Acenaphthene	602-87-9
		Acenaphthylene	208-96-8
		Anthracene	120-12-7
		Benz(a)anthracene	56-55-3
		Benzo(a)pyrene	50-32-8
		Benzo(b)fluoranthene	205-99-2
		Benzo(g,h,i)perylene	191-24-2
		Benzo(k)fluoranthene	207-08-9
		Biphenyl	92-52-4
		Camphene	79-92-5
		1-Chloronaphthalene	90-13-1
		2-Chloronaphthalene	91-58-7
		Chrysene	218-01-9
		Dibenz(a,h)anthracene	53-70-3

ANALYTICAL TEST GROUP #	NAME	PARAMETERS	CAS #s'
19	Extractables, Base Neutral (continued)	Fluoranthene	206-44-0
		Fluorene	86-73-7
		Indeno(1,2,3-cd)pyrene	193-39-5
		Indole	120-72-9
		1-Methylnaphthalene	90-12-0
		2-Methylnaphthalene	91-57-6
		Naphthalene	91-20-3
		Perylene	198-55-0
		Phenanthrene	85-01-8
		Pyrene	129-00-0
		Benzyl butyl phthalate	85-68-7
		Bis(2-ethylhexyl) phthalate	117-81-7
		Di-n-butyl phthalate	84-74-2
		4-Bromophenyl phenyl ether	101-55-3
		4-Chlorophenyl phenyl ether	7005-72-3
		Bis(2-chloroisopropyl)ether	108-60-1
		Bis(2-chloroethyl)ether	111-44-4
		Diphenyl ether	10-184-8
		2,4-Dinitrotoluene	121-14-2
		2,6-Dinitrotoluene	606-20-2
		Bis(2-chloroethoxy)methane	111-91-1
		Diphenylamine	122-39-4
		N-Nitrosodiphenylamine	86-30-6
		N-Nitrosodi-n-propylamine	621-64-7

TABLE 3 - ORGANIC CHEMICAL MANUFACTURING (OCM) SECTOR

CONVENTIONAL AND SECTOR PRIORITY POLLUTANT LIST (SHOWN BY ANALYTICAL TEST GROUPS)

SECTOR PRIORITY POLLUTANTS

ANALYTICAL TEST GROUP #	ANALYTICAL TEST GROUP NAME	PARAMETERS	CAS #s'
20	Extractables, Acid (Phenolics	2,3,4,5-Tetrachlorophenol	4901-51-3
		2,3,4,6-Tetrachlorophenol	58-90-2
		2,3,5,6-Tetrachlorophenol	935-95-5
		2,3,4-Trichlorophenol	15950-66-0
		2,3,5-Trichlorophenol	933-78-8
		2,4,5-Trichlorophenol	95-95-4
		2,4,6-Trichlorophenol	88-06-2
		2,4-Dimethyl phenol	105-67-9
		2,4-Dinitrophenol	51-28-5
		2,4-Dichlorophenol	120-83-2
		2,6-Dichlorophenol	87-65-0
		4,6-Dinitro-o-cresol	534-52-1
		2-Chlorophenol	95-57-8
		4-Chloro-3-methylphenol	59-50-7
		4-Nitrophenol	100-02-7
		m-Cresol	108-39-4
		o-Cresol	95-48-7
		p-Cresol	106-44-5
		Pentachlorophenol	87-86-5
		Phenol	108-95-2
23	Extractables, Neutral -Chlorinated	1,2,3,4-Tetrachlorobenzene	634-66-2
		1,2,3,5-Tetrachlorobenzene	634-90-2
		1,2,4,5-Tetrachlorobenzene	95-94-3
		1,2,3-Trichlorobenzene	87-61-6
		1,2,4-Trichlorobenzene	120-82-1
		2,4,5-Trichlorotoluene	6639-30-1
		Hexachlorobenzene	118-74-1
		Hexachlorobutadiene	87-68-3
		Hexachlorocyclopentadiene	77-47-4
		Hexachloroethane	67-72-1
		Octachlorostyrene	29082-74-4
		Pentachlorobenzene	608-93-5
24	Chlorinated Dibenzo-p-dioxins and Dibenzofurans	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6
		Octachlorodibenzo-p-dioxin	326-88-7
		Octachlorodibenzofuran	Unavailable
		Total heptachlorinated dibenzo-p-dioxins	Unavailable
		Total heptachlorinated dibenzofurans	Unavailable
		Total hexachlorinated dibenzo-p-dioxins	34465-46-8
		Total hexachlorinated dibenzofurans	Unavailable
		Total pentachlorinated dibenzo-p-dioxins	Unavailable
		Total pentachlorinated dibenzofurans	Unavailable
		Total tetrachlorinated dibenzo-p-dioxins	Unavailable
		Total tetrachlorinated dibenzofurans	Unavailable
27	Polychlorinated Biphenyls (PCBs) (Total)	PCBs (Total)	Unavailable

' CAS #s - Chemical Abstract Service numbers

* N/A - Not Applicable

** 4AAP = 4-amino antipyrine method

TABLE 4 - U.S. EPA BATEA PERFORMANCE DATA

POLLUTANT OR POLLUTANT PROPERTY BY PRIORITY POLLUTANT CLASSES	MEDIAN OF LONGTERM WEIGHTED MEANS (PPB)
Halogenated Methanes (C1)	
Carbon tetrachloride	10
Chloroform	10
Methylene chloride	10
Methyl chloride	50
Bromoform	10
Bromodichloromethane	10
Chlorinated C2's	
1,2-Dichloroethane	13.4
1,1,1-Trichloroethane	10
Hexachoroethane	10
1,1,2-Trichloroethane	10
Chloroethane	50
1,1-Dichloroethylene	10
1,2-trans-Dichloroethylene	10
Tetrachloroethylene	10.7
Trichloroethylene	10
Vinyl chloride	10
Chlorinated C3's	
1,2-Dichloropropane	59.4
1,3-Dichloropropylene	36.9
Chlorinated C4's	
Hexachlorobutadiene	10
Chloroalkyl Ethers	
bis(2-chlorosopropyl)ether	10
Metals	
Antimony	158
Arsenic	25.1
Chromium	64.5
Copper	27.7
Lead	100
Mercury	2.03
Nickel	166
Selenium	12
Zinc	69.5
Miscellaneous	
Acrylonitrile	50
Cyanide	64.9
Aromatics	
Benzene	10
Ethylbenzene	10
Toluene	10

POLLUTANT OR POLLUTANT PROPERTY BY PRIORITY POLLUTANT CLASSES	MEDIAN OF LONGTERM WEIGHTED MEANS (PPB)
Polyaromatics	
Acenaphthene	10
Fluoranthene	13.2
Napthalene	10
Benzo(a)anthracene	10
Benzo(a)pyrene	10
3,4-Benzofluoranthene	10
Chrysene	10
Acenapthylene	10
Anthracene	10
Fluorene	10
Phenanthrene	10
Pyrene	12.5
Chorearomatics	
Chlorobenzene	15.9
1,2,4-Trichlorobenzene	26.4
Hexachlorobenzene	10
o-Dichlorobenzene	52.3
m-Dichlorobenzene	21.3
p-Dichlorobenzene	10
Phthalate Esters	
bis(2-Ethylhexyl)phthalate	19.6
Di-n-butyl phthalate	22.2
Diethyl phthalate	44.4
Dimethyl phthalate	10
Nitroaromatics	
2,4-Dinitrotoluene	219
2,6-Dinitrotoluene	255
Nitrobenzene	206
Benzidines	
3,3-Dichlorobenzidine	262
Phenols	
2,4-Dimethylphenol	10.6
Phenol	10
Nitrophenols	
2-Nitrophenol	24
4-Nitrophenol	50
2,4-Dinitrophenol	50
4,6-Dinitro-o-cresol	20
Chlorophenols	
2,4,6-Trichlorophenol	65.9
2-Chlorophenol	10
2,4-Dichlorophenol	16.9
Pentachlorophenol	50

Table 5 - Summary of the Parameter/Frequency Assignment Rules

I ALL SITES

A) PROCESS EFFLUENTS/COMBINED EFFLUENTS/BATCH DISCHARGES

DAILY	pH, Specific Conductance (both continuous preferred)
THRICE WEEKLY	DOC, TSS, TOC (if TSS >15 mg/L)
WEEKLY	Oil & Grease

B) FINAL DISCHARGES* (Process effluents, Combined effluents or Batch discharges)

DAILY	Continuous monitoring - DOC, pH, Specific Conductance
WEEKLY	Phosphorus
MONTHLY	Toxicity - Rainbow Trout (LC50 96 h) Daphnia magna (LC50 48 h)

II SITE SPECIFIC

A) PROCESS EFFLUENTS/COMBINED EFFLUENTS/BATCH DISCHARGES

DAILY	VSS (biological treatment effluents only)
THRICE WEEKLY	Phosphorus and Total Nitrogen (biological treatment effluents only) Total NH_3 >10 mg/L (NO_3^- + NO_2^-) >10 mg/L Phenolics (4AAP) >10 µg/L OCM Sector List Priority Pollutants > Long Term Medians (LTM) (Table 3)
WEEKLY	Phosphorus >100 µg/L OCM Sector List Priority Pollutants > Method Detection Limits (MDL) < LTM Phenolics > MDL
MONTHLY	Analytical Test Group 20 (if Phenolics >10 µg/L) Complete Analytical Test Group (if one group member > MDL) OCM Sector List Priority Pollutants based on use/release (See Table 3)
QUARTERLY/ SEMI-ANNUALLY	All Conventional Pollutants (See Table 3) OCM Sector Priority Pollutant List (See Table 3) Open Characterization - Organic/Inorganic

B) OTCW/STORM WATER/WASTE DISPOSAL SITE EFFLUENTS

MONTHLY OR AT DISCHARGE	DOC, pH, Specific Conductance, TSS, Phosphorus, Oil & Grease Selected other Conventional Pollutants based on source chemicals Selected OCM Sector List Priority Pollutants based on source chemicals
QUARTERLY (OTCW)	Toxicity - Rainbow Trout (LC50 96 h) Daphnia magna (LC50 48 h)

C) EMERGENCY OVERFLOWS

AT DISCHARGE	DOC, pH, Specific Conductance, TSS, Phosphorus, Oil & Grease Selected other Conventional Pollutants based on source chemicals Selected OCM Sector List Priority Pollutants based on source chemicals

TABLE 6 - PROBABILITY OF DETECTING AT LEAST ONE SAMPLE ABOVE THE DETECTION LIMIT

SINGLE SAMPLE PROBABILITY OF		NUMBER OF SAMPLES								RATIO OF DETECT/ (DETECT + NON-DETECT)
DETECT (P)	NON-DETECT (Q)	12	11	10	9	8	6	4	2	(D/D+ND)
0.5	0.5	0.999	0.999	0.999	0.998	0.996	0.984	0.937	0.750	1/2
0.4	0.6	0.998	0.996	0.994	0.990	0.983	0.953	0.870	0.640	2/5
0.3	0.7	0.986	0.980	0.972	0.960	0.942	0.882	0.759	0.510	3/10
0.2	0.8	0.931	0.914	0.893	0.866	0.832	0.738	0.590	0.360	1/5
0.1	0.9	0.717	0.686	0.651	0.613	0.569	0.468	0.344	0.190	1/10
0.05	0.95	0.460	0.431	0.401	0.370	0.337	0.265	0.185	0.098	1/20
0.02	0.98	0.215	0.199	0.183	0.166	0.149	0.114	0.078	0.040	1/50
0.01	0.99	0.113	0.105	0.095	0.086	0.077	0.058	0.039	0.019	1/100

The table shows the probability of a sample with a parameter above MDL for the number of samples tested.

TABLE 7 - OCM SECTOR PLANT GROUPINGS FOR CHARACTERIZATION

GROUP	CHARACTERISTICS	PLANT SITES
A	- simple process	Borg-Warner (Canada) Ltd.
	- single product	Du Pont Canada Inc. (Corunna)
	- polymers only	Novacor Chemicals Ltd.
	- continuous process	Rohm & Haas Canada Inc.
	- no chlorinated materials	
B	- moderate to complex process	B. F. Goodrich Canada Inc.
	- multi-product sites	BTL Industries Inc.
	- continuous and batch processes	Canadian Oxy Chemicals Ltd.
	- chlorinated materials	Celanese Canada Inc.
	- site in concern area	Cornwall Chemical Ltd.
	- history of environmental problems	Courtaulds Fibres Canada
		Courtaulds Films
		Domtar Inc.
		Dow Chemical Canada Inc.
		Du Pont Canada Inc. (Kingston)
		Du Pont Canada Inc. (Maitland)
		ESSO Chemical Canada, a Division of Imperial Oil Ltd.
		Ethyl Canada Inc.
		Polysar Ltd.
		Uniroyal Chemical Ltd.

NOTE: The characterization requirements for Group A plant sites may be increased to Group B levels in cases where less than four days of pre-regulation monitoring data was provided to the Ministry by the sites.

PART III

THE DRAFT EFFLUENT MONITORING REGULATION FOR THE ORGANIC CHEMICAL MANUFACTURING SECTOR

DRAFT REGULATION MADE UNDER THE ENVIRONMENTAL PROTECTION ACT

EFFLUENT MONITORING - ORGANIC CHEMICAL MANUFACTURING SECTOR

TABLE OF CONTENTS

DEFINITIONS

1.-(1) In this Regulation,

"characterization" means the analysis of a sample to identify and quantify all of the parameters in Schedule AA;

"combined effluent" means any intentional combination of process effluent or process materials with cooling water;

"final discharge sampling point" means a location in a process effluent, combined effluent or batch discharge effluent stream situated,

(a) before the place of discharge to a surface watercourse, and

(b) downstream of all additions of effluent to that stream;

"General Effluent Monitoring Regulation" means Ontario Regulation 358/88;

"inspection sample" means a set of samples collected by a provincial officer from a sampling point of a direct discharger;

"process change" means any change in equipment, production process or treatment process;

"semi-annually" means a period of six months beginning on the first day of January or July;

"travelling blank sample" means a quality control sample of uncontaminated water that accompanies a set of sample containers from the laboratory to a sampling point and that is opened, preserved, resealed and returned to the laboratory with the set of samples for analysis;

"travelling spiked blank sample" means a quality control sample of uncontaminated water to which a certain recorded quantity of standard solution and appropriate preservative is added in the laboratory a maximum of twenty-four hours before accompanying a set of sample containers from the laboratory to a sampling point and back, unopened, to the laboratory for analysis with the set of samples;

"waste disposal site" means an on-site or off-site area of land, owned or operated by the direct discharger, and established or operated to accept wastes and includes landfarms;

"waste disposal site effluent sampling point" means a point in a waste disposal site effluent stream situated,

(a) before the place of discharge to a surface watercourse,

(b) after final treatment, and

(c) upstream of significant dilution by other effluent;

"waste disposal site effluent stream" means a waste disposal site effluent

which flows through an open or closed channel;

(2) The definitions in section 1 of the General Effluent Monitoring Regulation that are not redefined in this Regulation apply to this Regulation.

PURPOSE

2. The purpose of this Regulation is to establish a data base on effluent quality in the organic chemical manufacturing sector that, along with other pertinent information, will be used in the development of effluent limits for that sector and to quantify the mass loadings of monitored contaminants being discharged into surface watercourses.

APPLICATION

3.-(1) This Regulation applies only with respect to the direct dischargers listed in subsection (2).

(2) The respective site-specific monitoring schedule for each direct discharger in the organic chemical manufacturing sector at the plant location named is as follows:

Direct Discharger (by owner as of August 1, 1988)	Location	Schedule
B.F. Goodrich Canada Inc.	Thorold	A
BTL Industries Inc.	Belleville	B
Borg-Warner (Canada) Limited	Cobourg	C
CanadianOxy Chemicals Ltd.	Fort Erie	D
Celanese Canada Inc.	Kingston	E
Cornwall Chemicals Limited	Cornwall	F
Courtaulds Fibres Canada, a Division of Courtaulds Fibers Inc.	Cornwall	G
Courtaulds Films Canada, a Division of International Paints (Canada) Limited	Cornwall	H
Domtar Inc.	Longford Mills	I
Dow Chemical Canada Inc.	Sarnia	J
Du Pont Canada Inc.	Corunna	K

Du Pont Canada Inc.	Kingston	L
Du Pont Canada Inc.	Maitland	M
Esso Chemical Canada, a Division of Imperial Oil Ltd.	Sarnia	N
Ethyl Canada Inc.	Corunna	O
Novacor Chemicals Ltd.	Mooretown	P
Polysar Limited	Sarnia	Q
Rohm and Haas Canada Inc.	Morrisburg	R
Uniroyal Chemical Ltd.	Elmira	S

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(3) This Regulation is a Sectoral Effluent Monitoring Regulation within the meaning of the General Effluent Monitoring Regulation.

(4) Each direct discharger shall carry out the monitoring obligations, including the sampling, analysis, toxicity testing, flow measurement, recording and reporting obligations of this Regulation, in accordance with the General Effluent Monitoring Regulation.

(5) An obligation on a person to do a thing under this Regulation is discharged if another person has done it.

(6) Any owner of a plant listed in subsection (2) with a name different than the name used in subsection (2) shall notify the Director in writing of its legal and other names within thirty days after the day of filing of this Regulation and within thirty days after any change of owner or operator or its name.

SAMPLING POINTS

4.-(1) Each direct discharger shall establish a sampling point on each effluent stream specified in the respective site-specific monitoring schedule.

(2) The sampling points established under subsection (1) shall be used for all sampling required by this Regulation, except that a direct discharger may use an alternate sampling point where that is acceptable to the Director.

(3) For the purposes of sections 5, 7, 8 and 9, for each constituent process effluent, combined effluent and batch discharge effluent stream, each direct discharger shall collect the sets of samples required by these sections on the same day for each specified frequency.

(4) Subject to subsection (3), each direct discharger with multiple

process effluent, combined effluent and batch discharge sampling points need not collect the sets of samples from the sampling points on the same day.

CHARACTERIZATION

5.-(1) Each direct discharger shall collect a set of samples sufficient to perform all of the analyses required by subsections (3), (4) and (5) from each process effluent, combined effluent and batch discharge sampling point of that discharger,

(a) at the frequencies and sampling intervals for all analytical test groups, except group 24, specified in the respective site-specific monitoring schedule;

(b) at the frequencies and sampling intervals for analytical test group 24 specified in the respective site-specific monitoring schedule; and

(c) once within thirty days after every process change that is expected to significantly and adversely affect the quality of that effluent.

(2) Clause (1)(c) does not apply to experimental process changes of less than thirty days duration.

(3) Each direct discharger shall analyze each set of samples collected under clause (1)(a) for the parameters in each analytical test group in Column 2 of Schedule AA, except group 24.

(4) Each direct discharger shall analyze each set of samples collected under clause (1)(b) for the parameters in analytical test group 24 in Column 2 of Schedule AA.

(5) Each direct discharger shall perform open characterization analyses on each set of samples collected under clause (1)(a).

(6) Where the frequencies of sampling required by clauses (1)(a) and (1)(b) coincide, each direct discharger shall collect the sets of samples required by clauses (1)(a) and (1)(b) on the same day.

DAILY MONITORING

6.-(1) Subject to subsection (2), at each final discharge sampling point, each direct discharger shall,

(a) continuously sample and analyze, using an on-line analyzer, for the parameters in analytical test groups 3, 5a and 7 in Schedule AA; or

(b) during each operating day, collect a set of samples and shall analyze those samples for the parameters specified in clause (1)(a).

(2) If a direct discharger is unable to carry out the requirements of subsection (1) at a final discharge sampling point, that discharger shall collect a set of samples from each constituent effluent stream and shall analyze those samples for the parameters specified in clause (1)(a).

(3) During each operating day, each direct discharger shall collect a set of samples from each process effluent, combined effluent and batch discharge sampling point of that discharger and shall analyze those samples for the parameters specified at a daily frequency for the respective effluent stream in the respective site-specific monitoring schedule and for which they have not been analyzed under subsections (1) or (2).

(4) Subsections (1) to (3) do not apply in respect of any day in which a sufficient volume of sample cannot be collected because of the collection of inspection samples.

THRICE-WEEKLY MONITORING

7.-(1) On at least three separate operating days in each week, each direct discharger shall collect a set of samples from each process effluent, combined effluent and batch discharge sampling point of that discharger and shall analyze those samples for the parameters specified at a thrice-weekly frequency for the respective effluent stream in the respective site-specific monitoring schedule.

WEEKLY MONITORING

8.-(1) On at least one operating day in each week on the same day that a set of samples are collected under subsection 7(1) for that effluent stream, each direct discharger shall collect a set of samples from each process effluent, combined effluent and batch discharge sampling point of that discharger and shall analyze those samples for the parameters specified at a weekly frequency for the respective effluent stream in the respective site-specific monitoring schedule.

(2) For the purposes of subsection (1), samples collected after the first sample collected under subsection (1) shall be collected no sooner than two days after the previous sampling.

MONTHLY MONITORING

9.-(1) On at least one operating day in each month on the same day that a set of samples are collected under subsection 7(1) for that effluent stream, each direct discharger shall collect a set of samples from each process effluent, combined effluent and batch discharge sampling point of that discharger and shall analyze those samples for the parameters specified at a monthly frequency for the respective effluent stream in the respective site-specific monitoring schedule.

(2) For the purposes of subsection (1), samples collected after the first

sample collected under subsection (1) shall be collected no sooner than two weeks after the previous sampling.

MONTHLY MONITORING - ONCE-THROUGH COOLING WATER

10.-(1) On the same day that a set of samples required by subsection 9(1) is collected, each direct discharger shall collect a set of samples from each once-through cooling water sampling point of that discharger and shall analyze those samples for the parameters specified in the respective site-specific monitoring schedule.

MONTHLY MONITORING - STORM WATER

11.-(1) Subject to subsections (2) and (3), on at least one day in each month, each direct discharger shall collect a set of samples from each storm water sampling point on each affected storm water effluent stream of that discharger during a discharge of storm water and shall analyze those samples for the parameters specified in the respective site-specific monitoring schedule.

(2) For the purposes of subsection (1), where a direct discharger has failed to collect a set of samples from a storm water sampling point of that discharger during any month, that discharger shall collect a compensating set of samples from that sampling point during a subsequent storm event for which a set of samples is not collected under subsection (1) and shall analyze those samples for the parameters specified in the respective site-specific monitoring schedule.

(3) Each direct discharger shall make every reasonable effort to ensure that at least two sets of samples from each storm water sampling point of that discharger are collected under subsection (1) in the period of January to May during a thaw.

MONTHLY MONITORING - WASTE DISPOSAL SITE EFFLUENT

12.-(1) On one day in each month or at the time of discharge, whichever is less frequent, each direct discharger shall collect a set of samples from each waste disposal site effluent sampling point on each affected waste disposal site effluent stream of that discharger during a discharge of waste disposal site effluent and shall analyze those samples for the parameters specified in the respective site-specific monitoring schedule.

EVENT MONITORING - EMERGENCY OVERFLOW

13.-(1) During each emergency overflow, each direct discharger shall collect a set of samples from each emergency overflow sampling point on each affected emergency overflow effluent stream of that discharger and shall analyze those samples for the parameters specified in the respective site-specific monitoring schedule.

(2) Subsection (1) does not apply if the collection of samples would

result in extraordinary danger to health or safety.

QUALITY CONTROL MONITORING

14.-(1) For the purposes of this section, "quality control samples" mean,

(a) one duplicate sample for each sample collected under sections 6 to 9 for analysis for parameters in each analytical test group in Column 2 of Schedule AA;

(b) one travelling blank sample for each sample collected under sections 6 to 9 for analysis for parameters in each analytical test group in Column 2 of Schedule AA, except groups 1, 3 and 8; and

(c) one travelling spiked blank sample for each sample collected under sections 6 to 9 for analysis for parameters in analytical test groups 16 to 24 and 27 in Column 2 of Schedule AA.

(2) Each travelling spiked blank sample required to be analyzed by this section shall be prepared with a standard solution containing at least the parameters to be analyzed for.

(3) Each direct discharger shall collect quality control samples from one process effluent or combined effluent sampling point of that discharger once in each month concurrent with the sampling required by sections 6 and 7 and shall analyze the samples for the parameters specified at a daily and thrice-weekly frequency for the respective effluent stream in the respective site-specific monitoring schedule.

(4) Each direct discharger shall collect quality control samples from one process effluent or combined effluent sampling point of that discharger once in each quarter concurrent with the sampling required by sections 8 and 9 and shall analyze the samples for the parameters specified at a weekly and monthly frequency for the respective effluent stream in the respective site-specific monitoring schedule.

TOXICITY TESTING

15.-(1) Each direct discharger shall collect a sample from each final discharge sampling point of that discharger once in each month on the same day as one of the sets of samples required by section 9 is collected from that sampling point and shall perform thereon a fish toxicity test.

(2) If a test performed on a sample collected from a final discharge sampling point under subsection (1) in three consecutive months results in mortality for no more than two out of ten fish at each effluent concentration, a direct discharger may thereafter collect a sample from that sampling point only once in each quarter, on the same day as one of the sets of samples required by section 9 is collected from that sampling point, and perform the tests required in subsection (1).

(3) Subsection (2) ceases to apply in the event that a test performed under it results in mortality for more than two out of ten fish at any effluent concentration.

(4) Each direct discharger shall collect a sample from each final discharge sampling point of that discharger once in each month on the same day as one of the sets of samples required by section 9 is collected from that sampling point and shall perform thereon a Daphnia magna acute lethality toxicity test.

(5) In a month in which a sample is to be collected for a fish toxicity test, the sample required by subsection (4) shall be collected together in the same container or set of containers with the fish toxicity test sample.

(6) Each direct discharger shall collect a sample from each once-through cooling water sampling point of that discharger once in each quarter on the same day as one of the sets of samples required by section 10 is collected from that sampling point and shall perform, on each of the samples required by this subsection,

(a) a fish toxicity test; and

(b) a Daphnia magna acute lethality toxicity test.

(7) If the initial test performed under subsection (6) results in mortality for no more than two out of ten test species for both tests at each effluent concentration, a direct discharger may thereafter collect the samples and perform the tests required by subsection (6) on a 100 per cent undiluted test solution only.

(8) Subsection (7) ceases to apply in the event that either test performed under it results in mortality for more than two out of ten test species in the 100 per cent undiluted test solution.

FLOW MEASUREMENT

16.-(1) Subject to subsection (2), each direct discharger shall continuously measure the flow of each process effluent and combined effluent stream of that discharger at a location or set of locations representative of the flow at the sampling point established for that stream and shall record the measured flow.

(2) Where there is no continuous flow measurement in place on a combined effluent stream, each direct discharger shall estimate the total daily flow of the stream and shall record the estimated flow.

(3) Where the flow of a process effluent or combined effluent stream cannot be continuously measured on any day because of equipment malfunction and all reasonable care has been taken to avoid and correct the malfunction, the direct discharger may fulfill the requirement of subsection (1) by estimating the total daily flow of the stream and recording that estimate.

(4) Each direct discharger shall, at the time of each sampling,

(a) measure or estimate the flow of each batch discharge and once-through cooling water effluent stream of that discharger; and

(b) measure or estimate the duration and approximate volume of each discharge of storm water, waste disposal site effluent and emergency overflow of that discharger,

at a location or set of locations representative of the flow at the sampling point established for that stream and shall record the measured or estimated flow.

REPORTING

17.-(1) Within seven days after this section comes into force, each direct discharger shall submit an initial report to the Director in respect of that direct discharger's plant.

(2) Each direct discharger shall report any significant changes to the information submitted under subsection (1) to the Director within thirty days after the end of the month during which the change occurs.

(3) Each direct discharger shall report to the Director the results of all analyses performed by or on behalf of the direct discharger under sections 5 to 15 of this Regulation and under subsection 4(12) of the General Regulation, including all positive numerical values at or above the analytical method detection limits calculated by the laboratory performing the analysis.

(4) Each direct discharger shall report to the Director the flow measurement information recorded in respect of each process effluent stream, combined effluent stream, batch discharge and once-through cooling water effluent stream of that discharger.

(5) Each direct discharger shall report to the Director the date and duration of each storm event, the amount of rainfall during that event and the date, duration and approximate volume of each discharge of storm water to a surface watercourse for which a set of samples is collected under section 11.

(6) Each direct discharger shall report to the Director the date, duration and approximate volume of each discharge of waste disposal site effluent to a surface watercourse.

(7) Each direct discharger shall report to the Director the date, location, duration and approximate volume of effluent discharged during each emergency overflow.

(8) The reports referred to in subsections (4) to (7) shall be submitted to the Director within thirty days after the end of the month in which the information was recorded.

(9) Except for samples collected from storm water, waste disposal site

effluent and emergency overflow sampling points, at least thirty days before the first day of each month, each direct discharger shall submit to the Director a schedule of sampling dates and times by location for all monthly and characterization sampling in that month.

(10) Within thirty days after the end of each quarter, each direct discharger shall submit a report to the Director summarizing the quantities of chemicals added to once-through cooling water in the previous quarter and stating the dates on which these additions occurred.

(11) No later than one year after this section comes into force, each direct discharger shall submit a report to the Director describing the variation in daily flow for a period of six months for each process effluent stream from which samples are collected other than by means of an automatic flow proportional composite sampling device.

(12) If a report required under subsection (11) is not provided, the respective process effluent stream shall be deemed to be a variable flow stream on the expiration of three months after the report was due and each sample collected from the effluent sampling point on that stream shall be in accordance with clause 3(4)(a) or (b) of the General Effluent Monitoring Regulation or by means of an on-line analyzer.

(13) The report referred to in subsection (11) shall include the raw data and calculation methods used to produce the report.

(14) Each direct discharger shall keep records of all sampling required by this Regulation, including, for each sample, the date and time of collection, sampling procedures used, the amount of sample dilution by preservative if dilution exceeds one per cent, and any incident likely to affect an analytical result.

(15) Each direct discharger shall develop a maintenance and calibration schedule for all sampling equipment and shall record the results of all maintenance and calibration performed.

(16) Records of all analytical methods used shall be kept by the direct discharger.

(17) Each direct discharger shall submit a report to the Director detailing the date, duration and cause of each sampling, toxicity testing, analytical and flow measurement malfunction or other problem which interferes with the requirements under this Regulation, and remedial action taken, within thirty days after the end of the month in which the malfunction or problem occurs.

(18) All records and reports required to be kept or made by this Regulation shall be retained by the direct discharger for a period of two years beyond the last report of any analytical data submitted as required by this Regulation.

TIMING

18.-(1) This Regulation, except subsection 17(1), comes into force on

the first day of the sixth month following filing.

(2) Subsection 17(1) comes into force on the first day of the fourth month following filing.

(3) Sections 5, 7 to 13 and 15 and subsections 17(5) and 17(6) are revoked one year after the day this Regulation comes into force.

(4) Sections 4 to 15 of this Regulation cease to apply to an effluent of a direct discharger when the Director issues an approval under the Ontario Water Resources Act which refers to this subsection and specifies the sections of this Regulation which do not apply to that effluent.

SCHEDULE AA - MONITORING PARAMETERS - ORGANIC CHEMICAL MANUFACTURING (OCM) SECTOR

	COLUMN 1	COLUMN 2	COLUMN 3
ANALYTICAL TEST GROUP #	NAME	PARAMETERS	CAS #s
1	Chemical Oxygen Demand	Chemical oxygen demand (COD)	N/A
2	Cyanide	Cyanide	57-12-5
3	Hydrogen ion (pH)	Hydrogen ion (pH)	N/A
4a	Nitrogen	Ammonia plus Ammonium	N/A
		Total Kjeldahl nitrogen	N/A
4b		Nitrate + Nitrite	N/A
5a	Organic carbon	Dissolved organic carbon (DOC)	N/A
5b		Total organic carbon (TOC) (NOTE 1)	N/A
6	Total phosphorus	Total phosphorus	N/A
7	Specific conductance	Specific conductance	N/A
8	Suspended solids	Total suspended solids (TSS)	N/A
		Volatile suspended solids (VSS)	N/A

NOTE 1: Total organic carbon is to be analyzed only if the total suspended solids concentration exceeds 15mg/L.

SCHEDULE AA - MONITORING PARAMETERS - ORGANIC CHEMICAL MANUFACTURING (OCM) SECTOR

	COLUMN 1	COLUMN 2	COLUMN 3
ANALYTICAL TEST GROUP #	NAME	PARAMETERS	CAS #s
9	Total metals	Aluminum	7429-90-5
		Beryllium	7440-41-7
		Cadmium	7440-43-9
		Chromium	7440-47-3
		Cobalt	7440-48-4
		Copper	7440-50-8
		Lead	7439-92-1
		Molybdenum	7439-98-7
		Nickel	7440-02-0
		Silver	7440-22-4
		Thallium	7440-28-0
		Vanadium	7440-62-2
		Zinc	7440-66-6
10	Hydrides	Antimony	7440-36-0
		Arsenic	7440-38-2
		Selenium	7782-49-2
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)	7440-47-3
12	Mercury	Mercury	7439-97-6
13	Total alkyl lead	Tetra-ethyl lead	78-00-2
		Tri-ethyl lead	N/A
14	Phenolics (4AAP)	Phenolics (4AAP)*	N/A
15	Sulphide	Sulphide	N/A

NOTE 2: Chromium (Hexavalent) is to be analyzed only if total chromium >1.0mg/L.

* 4AAP = 4-amino antipyrine method

SCHEDULE AA - MONITORING PARAMETERS - ORGANIC CHEMICAL MANUFACTURING (OCM) SECTOR

	COLUMN 1	COLUMN 2	COLUMN 3
ANALYTICAL TEST GROUP #	NAME	PARAMETERS	CAS #s
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane	79-34-5
		1,1,2-Trichloroethane	79-00-5
		1,1-Dichloroethane	75-34-3
		1,1-Dichloroethylene	75-35-4
		1,2-Dichlorobenzene	95-50-1
		1,2-Dichloroethane (Ethylene dichloride)	107-06-2
		1,2-Dichloropropane	78-87-5
		1,3-Dichlorobenzene	541-73-1
		1,4-Dichlorobenzene	106-46-7
		Bromoform	75-25-2
		Bromomethane	74-83-9
		Carbon tetrachloride	56-23-5
		Chlorobenzene	108-90-7
		Chloroform	67-66-3
		Chloromethane	74-87-3
		Cis-1,3-Dichloropropylene	10061-01-5
		Dibromochloromethane	124-48-1
		Ethylene dibromide	106-93-4
		Methylene chloride	75-09-2
		Tetrachloroethylene (Perchloroethylene)	127-18-4
		Trans-1,2-Dichloroethylene	156-60-5
		Trans-1,3-Dichloropropylene	10061-02-6
		Trichloroethylene	79-01-6
		Trichlorofluoromethane	75-69-4
		Vinyl chloride (Chloroethylene)	75-01-4

SCHEDULE AA - MONITORING PARAMETERS - ORGANIC CHEMICAL MANUFACTURING (OCM) SECTOR

	COLUMN 1	COLUMN 2	COLUMN 3
ANALYTICAL TEST GROUP #	NAME	PARAMETERS	CAS #s
17	Volatiles, Non-Halogenated	Benzene	71-43-2
		Styrene	100-42-5
		Toluene	108-88-3
		o-Xylene	95-47-6
		m-Xylene and p-Xylene (NOTE 3)	108-38-3
			& 106-42-3
18	Volatiles, Water Soluble	Acrolein	107-02-8
		Acrylonitrile	107-13-1

NOTE 3: m-Xylene and p-xylene often co-elute in the analysis. A single combined result may be reported

SCHEDULE AA - MONITORING PARAMETERS - ORGANIC CHEMICAL MANUFACTURING (OCM) SECTOR

	COLUMN 1	COLUMN 2	COLUMN 3
ANALYTICAL TEST GROUP #	NAME	PARAMETERS	CAS #s
19	Extractables, Base Neutral	Acenaphthene	83-32-9
		5-nitro Acenaphthene	602-87-9
		Acenaphthylene	208-96-8
		Anthracene	120-12-7
		Benz(a)anthracene	56-55-3
		Benzo(a)pyrene	50-32-8
		Benzo(b)fluoranthene	205-99-2
		Benzo(g,h,i)perylene	191-24-2
		Benzo(k)fluoranthene	207-08-9
		Biphenyl	92-52-4
		Camphene	79-92-5
		1-Chloronaphthalene	90-13-1
		2-Chloronaphthalene	91-58-7
		Chrysene	218-01-9
		Dibenz(a,h)anthracene	53-70-3
		Fluoranthene	206-44-0
		Fluorene	86-73-7
		Indeno(1,2,3-cd)pyrene	193-39-5
		Indole	120-72-9
		1-Methylnaphthalene	90-12-0
		2-Methylnaphthalene	91-57-6
		Naphthalene	91-20-3
		Perylene	198-55-0
		Phenanthrene	85-01-8
		Pyrene	129-00-0
		Benzyl butyl phthalate	85-68-7
		Bis(2-ethylhexyl) phthalate	117-81-7
		Di-n-butyl phthalate	84-74-2

	COLUMN 1	COLUMN 2	COLUMN 3
ANALYTICAL TEST GROUP #	NAME	PARAMETERS	CAS #s
19	Extractables, Base Neutral (continued)	4-Bromophenyl phenyl ether	101-55-3
		4-Chlorophenyl phenyl ether	7005-72-3
		Bis(2-chloroisopropyl)ether	108-60-1
		Bis(2-chloroethyl)ether	111-44-4
		Diphenyl ether	10-184-8
		2,4-Dinitrotoluene	121-14-2
		2,6-Dinitrotoluene	606-20-2
		Bis(2-chloroethoxy)methane	111-91-1
		Diphenylamine (NOTE 4)	122-39-4
		N-Nitrosodiphenylamine (NOTE 4)	86-30-6
		N-Nitrosodi-n-propylamine	621-64-7

NOTE 4: Diphenylamine & N-Nitrosodiphenylamine often co-elute in the GC/MS analysis. A single combined result may be reported as Diphenylamine.

SCHEDULE AA - MONITORING PARAMETERS - ORGANIC CHEMICAL MANUFACTURING (OCM) SECTOR

	COLUMN 1	COLUMN 2	COLUMN 3
ANALYTICAL TEST GROUP #	NAME	PARAMETERS	CAS #s
20	Extractables, Acid (Phenolics)	2,3,4,5-Tetrachlorophenol	4901-51-3
		2,3,4,6-Tetrachlorophenol	58-90-2
		2,3,5,6-Tetrachlorophenol	935-95-5
		2,3,4-Trichlorophenol	15950-66-0
		2,3,5-Trichlorophenol	933-78-8
		2,4,5-Trichlorophenol	95-95-4
		2,4,6-Trichlorophenol	88-06-2
		2,4-Dimethyl phenol	105-67-9
		2,4-Dinitrophenol	51-28-5
		2,4-Dichlorophenol	120-83-2
		2,6-Dichlorophenol	87-65-0
		4,6-Dinitro-o-cresol	534-52-1
		2-Chlorophenol	95-57-8
		4-Chloro-3-methylphenol	59-50-7
		4-Nitrophenol	100-02-7
		m-Cresol	108-39-4
		o-Cresol	95-48-7
		p-Cresol	106-44-5
		Pentachlorophenol	87-86-5
		Phenol	108-95-2

SCHEDULE AA - MONITORING PARAMETERS - ORGANIC CHEMICAL MANUFACTURING (OCM) SECTOR

	COLUMN 1	COLUMN 2	COLUMN 3
ANALYTICAL TEST GROUP #	NAME	PARAMETERS	CAS #s
23	Extractables, Neutral -Chlorinated	1,2,3,4-Tetrachlorobenzene	634-66-2
		1,2,3,5-Tetrachlorobenzene	634-90-2
		1,2,4,5-Tetrachlorobenzene	95-94-3
		1,2,3-Trichlorobenzene	87-61-6
		1,2,4-Trichlorobenzene	120-82-1
		2,4,5-Trichlorotoluene	6639-30-1
		Hexachlorobenzene	118-74-1
		Hexachlorobutadiene	87-68-3
		Hexachlorocyclopentadiene	77-47-4
		Hexachloroethane	67-72-1
		Octachlorostyrene	29082-74-4
		Pentachlorobenzene	608-93-5
24	Chlorinated Dibenzo-p-dioxins and Dibenzofurans	2,3,7,8-Tetrachlorodibenzo-p-dioxin	1746-01-6
		Octachlorodibenzo-p-dioxin	326-88-7
		Octachlorodibenzofuran	Unavailable
		Total heptachlorinated dibenzo-p-dioxins	Unavailable
		Total heptachlorinated dibenzofurans	Unavailable
		Total hexachlorinated dibenzo-p-dioxins	34465-46-8
		Total hexachlorinated dibenzofurans	Unavailable
		Total pentachlorinated dibenzo-p-dioxins	Unavailable
		Total pentachlorinated dibenzofurans	Unavailable
		Total tetrachlorinated dibenzo-p-dioxins	Unavailable
		Total tetrachlorinated dibenzofurans	Unavailable
25	Solvent Extractables	Oil and grease	
26a	Fatty Acids	Monitoring protocols currently unavailable	
26b	Resin Acids	This group does not apply to the Organic Chemical Manufacturing Sector	

SCHEDULE AA - MONITORING PARAMETERS - ORGANIC CHEMICAL MANUFACTURING (OCM) SECTOR

	COLUMN 1	COLUMN 2	COLUMN 3
#	ANALYTICAL TEST GROUP NAME	PARAMETERS	CAS #s
27	PCBs (Total)	PCBs (Total)	Unavailable

LEGEND FOR SCHEDULES A - S

NOTE 1: Total organic carbon is to be analyzed only if the total suspended solids concentration exceeds 15 milligrams/litre.

NOTE 2: Chromium (Hexavalent) is to be analyzed only if total chromium is greater than 1.0 milligram/litre.

NOTE 3: m-Xylene and p-Xylene often co-elute in the analysis. A single combined result may be reported.

NOTE 4: Diphenylamine and N-Nitrosodiphenylamine often co-elute in the Gas Chromatography/Mass Spectrometry (GC/MS) analysis. A single combined result may be reported as Diphenylamine.

* 4AAP = 4-amino antipyrine method

ATG - Analytical Test Group

D - Daily

TW - Thrice weekly

W - Weekly

M - Monthly

STREAM CLASSIFICATION AND MISA CODE:

e.g. PR 0100

PR - process effluent
0100 - MISA control point number

Stream Classifications:

PR - process effluent
CO - combined effluent
BA - batch discharge
OT - once-through cooling water
ST - storm water
WA - waste disposal site effluent
EM - emergency overflow

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE A - B. F. GOODRICH CANADA INC. (THOROLD)

STREAM CLASSIFICATION AND IMIS CODE:			PR 0100				WA 0400
TOXICITY TESTS REQUIRED:			Yes				No
CHARACTERIZATION FREQUENCY (except for AT6 24):			Quarterly				None
INTERVAL:			2-4 months apart				
CHARACTERIZATION FREQUENCY FOR AT6 24:			Quarterly				None
INTERVAL:			2-4 months apart				
FREQUENCY OF SAMPLING:			D	TW	W	M	during discharge
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**					
2	Cyanide	Cyanide			●●●		●●●
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●
4a	Nitrogen	Ammonia plus Ammonium		●●●			●●●
		Total Kjeldahl nitrogen		●●●			●●●
4b		Nitrate + Nitrite		●●●			●●●
5a	Organic carbon (DOC)	Dissolved organic carbon (DOC)	●●●				●●●
5b		Total organic carbon (TOC) (NOTE 1)		●●●			●●●
6	Total phosphorus	Total phosphorus		●●●			●●●
7	Specific conductance	Specific conductance	●●●				●●●
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●			●●●
		Volatile suspended solids (VSS)	●●●				●●●
9	Total metals	Aluminum				●●●	●●●
		Beryllium				●●●	●●●
		Cadmium				●●●	●●●
		Chromium				●●●	●●●
		Cobalt				●●●	●●●
		Copper				●●●	●●●

EFFLUENT MONITORING REGULATION – ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE A – B. F. GOODRICH CANADA INC. (THOROLD)

STREAM CLASSIFICATION AND IMIS CODE:			PR 0100				WA 0400
TOXICITY TESTS REQUIRED:			Yes				No
CHARACTERIZATION FREQUENCY (except for AT6 24):			Quarterly				None
INTERVAL:			2-4 months apart				
CHARACTERIZATION FREQUENCY FOR AT6 24:			Quarterly				None
INTERVAL:			2-4 months apart				
FREQUENCY OF SAMPLING:			D	TW	W	M	during discharge
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**					
9	Total metals (continued)	Lead				●●●	●●●
		Molybdenum				●●●	●●●
		Nickel				●●●	●●●
		Silver				●●●	●●●
		Thallium				●●●	●●●
		Vanadium				●●●	●●●
		Zinc				●●●	●●●
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)				●●●	●●●
14	Phenolics (4AAP)	Phenolics (4AAP)*				●●●	●●●
15	Sulphide	Sulphide				●●●	●●●
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane				●●●	●●●
		1,1,2-Trichloroethane				●●●	●●●
		1,1-Dichloroethane				●●●	●●●
		1,1-Dichloroethylene				●●●	●●●
		1,2-Dichlorobenzene				●●●	●●●
		1,2-Dichloroethane (Ethylene dichloride)				●●●	●●●
		1,2-Dichloropropane				●●●	●●●
		1,3-Dichlorobenzene				●●●	●●●
		1,4-Dichlorobenzene				●●●	●●●
		Bromoform				●●●	●●●
		Bromomethane				●●●	●●●
		Carbon tetrachloride				●●●	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE A - B. F. GOODRICH CANADA INC. (THOROLD)

STREAM CLASSIFICATION AND IMIS CODE:			PR 0100				WA 0400
TOXICITY TESTS REQUIRED:			Yes				No
CHARACTERIZATION FREQUENCY (except for AT6 24):			Quarterly				None
INTERVAL:			2-4 months apart				
CHARACTERIZATION FREQUENCY FOR AT6 24:			Quarterly				None
INTERVAL:			2-4 months apart				
FREQUENCY OF SAMPLING:			D	TW	W	M	during discharge
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**					
16	Volatiles, Halogenated (continued)	Chlorobenzene				●●●	●●●
		Chloroform				●●●	●●●
		Chloromethane				●●●	●●●
		Cis-1,3-Dichloropropylene				●●●	●●●
		Dibromochloromethane				●●●	●●●
		Ethylene dibromide				●●●	●●●
		Methylene chloride				●●●	●●●
		Tetrachloroethylene (Perchloroethylene)				●●●	●●●
		Trans-1,2-Dichloroethylene				●●●	●●●
		Trans-1,3-Dichloropropylene				●●●	●●●
		Trichloroethylene				●●●	●●●
		Trichlorofluoromethane				●●●	●●●
		Vinyl chloride (Chloroethylene)		●●●			●●●
25	Solvent Extractables	Oil and grease			●●●		●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE B - BTL INDUSTRIES INC. (BELLEVILLE)

		STREAM CLASSIFICATION AND IMIS CODE:	CO 0100				CO 0200			
		TOXICITY TESTS REQUIRED:	Yes				Yes			
		CHARACTERIZATION FREQUENCY (except for AT6 24):	Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart			
		CHARACTERIZATION FREQUENCY FOR AT6 24:	Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED								
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●			
4a	Nitrogen	Ammonia plus Ammonium			●●●				●●●	
		Total Kjeldahl nitrogen			●●●				●●●	
4b		Nitrate + Nitrite								
5a	Organic carbon (DOC)	Dissolved organic carbon (DOC)	●●●				●●●			
5b		Total organic carbon (TOC) (NOTE 1)		●●●				●●●		
6	Total phosphorus	Total phosphorus			●●●				●●●	
7	Specific conductance	Specific conductance	●●●				●●●			
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●				●●●		
		Volatile suspended solids (VSS)								
14	Phenolics (4AAP)	Phenolics (4AAP)*		●●●				●●●		
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane								●●●
		1,1,2-Trichloroethane								●●●
		1,1-Dichloroethane								●●●
		1,1-Dichloroethylene								●●●
		1,2-Dichlorobenzene								●●●
		1,2-Dichloroethane (Ethylene dichloride)								●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE B - BTL INDUSTRIES INC. (BELLEVILLE)

		STREAM CLASSIFICATION AND IMIS CODE:	CO 0100				CO 0200			
		TOXICITY TESTS REQUIRED:	Yes				Yes			
		CHARACTERIZATION FREQUENCY (except for AT6 24):	Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart			
		CHARACTERIZATION FREQUENCY FOR AT6 24:	Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED								
16	Volatiles, Halogenated (continued)	1,2-Dichloropropane								●●●
		1,3-Dichlorobenzene								●●●
		1,4-Dichlorobenzene								●●●
		Bromoform								●●●
		Bromomethane								●●●
		Carbon tetrachloride								●●●
		Chlorobenzene								●●●
		Chloroform								●●●
		Chloromethane								●●●
		Cis-1,3-Dichloropropylene								●●●
		Dibromochloromethane								●●●
		Ethylene dibromide								●●●
		Methylene chloride								●●●
		Tetrachloroethylene (Perchloroethylene)								●●●
		Trans-1,2-Dichloroethylene								●●●
		Trans-1,3-Dichloropropylene								●●●
		Trichloroethylene								●●●
		Trichlorofluoromethane								●●●
		Vinyl chloride (Chloroethylene)								●●●
17	Volatiles, Non-Halogenated	Benzene				●●●				●●●
		Styrene				●●●				●●●
		Toluene		●●●						●●●
		o-Xylene				●●●				●●●
		m-Xylene and p-Xylene (NOTE 3)				●●●				●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE B - BTL INDUSTRIES INC. (BELLEVILLE)

		STREAM CLASSIFICATION AND IMIS CODE:	CO 0100				CO 0200			
		TOXICITY TESTS REQUIRED:	Yes				Yes			
		CHARACTERIZATION FREQUENCY (except for AT6 24):	Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart			
		CHARACTERIZATION FREQUENCY FOR AT6 24:	Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED								
20	Extractables, Acid (Phenolics)	2,3,4,5-Tetrachlorophenol				●●●				●●●
		2,3,4,6-Tetrachlorophenol				●●●				●●●
		2,3,5,6-Tetrachlorophenol				●●●				●●●
		2,3,4-Trichlorophenol				●●●				●●●
		2,3,5-Trichlorophenol				●●●				●●●
		2,4,5-Trichlorophenol				●●●				●●●
		2,4,6-Trichlorophenol				●●●				●●●
		2,4-Dimethyl phenol				●●●				●●●
		2,4-Dinitrophenol				●●●				●●●
		2,4-Dichlorophenol				●●●				●●●
		2,6-Dichlorophenol				●●●				●●●
		4,6-Dinitro-o-cresol				●●●				●●●
		2-Chlorophenol				●●●				●●●
		4-Chloro-3-methylphenol				●●●				●●●
		4-Nitrophenol				●●●				●●●
		m-Cresol				●●●				●●●
		o-Cresol				●●●				●●●
		p-Cresol				●●●				●●●
		Pentachlorophenol				●●●				●●●
		Phenol				●●●				●●●
25	Solvent Extractables	Oil and grease			●●●				●●●	

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE C - BORG-WARNER (CANADA) LIMITED (COBOURG)

		STREAM CLASSIFICATION AND IMIS CODE:	CO 0100				ST 0200
		TOXICITY TESTS REQUIRED:	Yes				No
		CHARACTERIZATION FREQUENCY (except for AT6 24):	Semi-annually				None
		INTERVAL:	6-8 months apart				
		CHARACTERIZATION FREQUENCY FOR AT6 24:	Quarterly				None
		INTERVAL:	2-4 months apart				
		FREQUENCY OF SAMPLING:	D	TW	W	M	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**					
2	Cyanide	Cyanide		●●●			●●●
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●
4a	Nitrogen	Ammonia plus Ammonium		●●●			
		Total Kjeldahl nitrogen		●●●			
4b		Nitrate + Nitrite		●●●			
5a	Organic carbon (DOC)	Dissolved organic carbon (DOC)	●●●				●●●
5b		Total organic carbon (TOC) (NOTE 1)		●●●			●●●
6	Total phosphorus	Total phosphorus		●●●			●●●
7	Specific conductance	Specific conductance	●●●				●●●
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●			●●●
		Volatile suspended solids (VSS)	●●●				
9	Total metals	Aluminum		●●●			●●●
		Beryllium				●●●	●●●
		Cadmium				●●●	●●●
		Chromium				●●●	●●●
		Cobalt				●●●	●●●
		Copper		●●●			●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE C - BORG-WARNER (CANADA) LIMITED (COBOURG)

STREAM CLASSIFICATION AND IMIS CODE:			CO 0100				ST 0200
TOXICITY TESTS REQUIRED:			Yes				No
CHARACTERIZATION FREQUENCY (except for AT6 24):			Semi-annually				None
INTERVAL:			6-8 months apart				
CHARACTERIZATION FREQUENCY FOR AT6 24:			Quarterly				None
INTERVAL:			2-4 months apart				
FREQUENCY OF SAMPLING:			D	TW	W	M	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**					
9	Total metals (continued)	Lead				●●●	●●●
		Molybdenum				●●●	●●●
		Nickel				●●●	●●●
		Silver				●●●	●●●
		Thallium				●●●	●●●
		Vanadium				●●●	●●●
		Zinc		●●●			●●●
10	Hydrides	Antimony		●●●			●●●
		Arsenic				●●●	●●●
		Selenium				●●●	●●●
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)				●●●	●●●
12	Mercury	Mercury		●●●			●●●
14	Phenolics (4AAP)	Phenolics (4AAP)*			●●●		●●●
17	Volatiles, Non-Halogenated	Benzene				●●●	●●●
		Styrene			●●●		●●●
		Toluene				●●●	●●●
		o-Xylene				●●●	●●●
		m-Xylene and p-Xylene (NOTE 3)				●●●	●●●

EFFLUENT MONITORING REGULATION – ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE C – BORG-WARNER (CANADA) LIMITED (COBOURG)

STREAM CLASSIFICATION AND IMIS CODE:			CO 0100				ST 0200
TOXICITY TESTS REQUIRED:			Yes				No
CHARACTERIZATION FREQUENCY (except for AT6 24):			Semi-annually				None
INTERVAL:			6-8 months apart				
CHARACTERIZATION FREQUENCY FOR AT6 24:			Quarterly				None
INTERVAL:			2-4 months apart				
FREQUENCY OF SAMPLING:			D	TW	W	M	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**					
18	Volatiles, Water Soluble	Acrolein				●●●	●●●
		Acrylonitrile			●●●		●●●
25	Solvent Extractables	Oil and grease			●●●		●●●

EFFLUENT MONITORING REGULATION – ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE D – CANADIAN OXY CHEMICALS LTD. (FORT ERIE)

STREAM CLASSIFICATION AND IMIS CODE:			CO 0100				ST 0200
TOXICITY TESTS REQUIRED:			Yes				No
CHARACTERIZATION FREQUENCY (except for AT6 24):			Quarterly				None
INTERVAL:			2-4 months apart				
CHARACTERIZATION FREQUENCY FOR AT6 24:			Quarterly				None
INTERVAL:			2-4 months apart				
FREQUENCY OF SAMPLING:			D	TW	W	M	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**					
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●
4a	Nitrogen	Ammonia plus Ammonium		●●●			●●●
		Total Kjeldahl nitrogen		●●●			●●●
4b		Nitrate + Nitrite					
5a	Organic carbon (DOC)	Dissolved organic carbon (DOC)	●●●				●●●
5b		Total organic carbon (TOC) (NOTE 1)		●●●			●●●
6	Total phosphorus	Total phosphorus			●●●		●●●
7	Specific conductance	Specific conductance	●●●				●●●
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●			●●●
		Volatile suspended solids (VSS)					
9	Total metals	Aluminum				●●●	●●●
		Beryllium				●●●	●●●
		Cadmium				●●●	●●●
		Chromium				●●●	●●●
		Cobalt				●●●	●●●
		Copper				●●●	●●●
		Lead				●●●	●●●
		Molybdenum				●●●	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE D - CANADIAN OXY CHEMICALS LTD. (FORT ERIE)

STREAM CLASSIFICATION AND IMIS CODE:			CO 0100				ST 0200
TOXICITY TESTS REQUIRED:			Yes				No
CHARACTERIZATION FREQUENCY (except for ATG 24):			Quarterly				None
INTERVAL:			2-4 months apart				
CHARACTERIZATION FREQUENCY FOR ATG 24:			Quarterly				None
INTERVAL:			2-4 months apart				
FREQUENCY OF SAMPLING:			D	TW	W	M	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**					
9	Total metals (continued)	Nickel				●●●	●●●
		Silver				●●●	●●●
		Thallium				●●●	●●●
		Vanadium				●●●	●●●
		Zinc				●●●	●●●
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)				●●●	●●●
14	Phenolics (4AAP)	Phenolics (4AAP)*		●●●			●●●
20	Extractables, Acid (Phenolics)	2,3,4,5-Tetrachlorophenol				●●●	
		2,3,4,6-Tetrachlorophenol				●●●	
		2,3,5,6-Tetrachlorophenol				●●●	
		2,3,4-Trichlorophenol				●●●	
		2,3,5-Trichlorophenol				●●●	
		2,4,5-Trichlorophenol				●●●	
		2,4,6-Trichlorophenol				●●●	
		2,4-Dimethyl phenol				●●●	
		2,4-Dinitrophenol				●●●	
		2,4-Dichlorophenol				●●●	
		2,6-Dichlorophenol				●●●	
		4,6-Dinitro-o-cresol				●●●	
		2-Chlorophenol				●●●	
		4-Chloro-3-methylphenol				●●●	
		4-Nitrophenol				●●●	

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE D - CANADIAN OXY CHEMICALS LTD. (FORT ERIE)

STREAM CLASSIFICATION AND IMIS CODE:			CO 0100				ST 0200
TOXICITY TESTS REQUIRED:			Yes				No
CHARACTERIZATION FREQUENCY (except for ATG 24):			Quarterly				None
INTERVAL:			2-4 months apart				
CHARACTERIZATION FREQUENCY FOR ATG 24:			Quarterly				None
INTERVAL:			2-4 months apart				
FREQUENCY OF SAMPLING:			D	TW	W	M	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**					
20	Extractables, Acid (Phenolics) (continued)	m-Cresol				●●●	
		o-Cresol				●●●	
		p-Cresol				●●●	
		Pentachlorophenol				●●●	
		Phenol				●●●	
25	Solvent Extractables	Oil and grease			●●●		●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE E - CELANESE CANADA INC. (KINGSTON)

		STREAM CLASSIFICATION AND IMIS CODE:	PR 0400				CO 0100				CO 0200				CO 0300				ST 0700
		TOXICITY TESTS REQUIRED:	No				Yes				Yes				Yes				No
		CHARACTERIZATION FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly				None
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart				
		CHARACTERIZATION FREQUENCY FOR AT6 24:	Semi-annually				Quarterly				Quarterly				Quarterly				None
		INTERVAL:	6-8 months apart				2-4 months apart				2-4 months apart				2-4 months apart				
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																	
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●				●●●				●●●				●●●
4a	Nitrogen	Ammonia plus Ammonium		●●●						●●●									
		Total Kjeldahl nitrogen		●●●						●●●									
4b		Nitrate + Nitrite		●●●						●●●									
5a	Organic carbon (DOC)	Dissolved organic carbon (DOC)		●●●			●●●				●●●				●●●				●●●
5b		Total organic carbon (TOC) (NOTE 1)		●●●				●●●				●●●				●●●			●●●
6	Total phosphorus	Total phosphorus		●●●					●●●				●●●				●●●		●●●
7	Specific conductance	Specific conductance	●●●				●●●				●●●				●●●				●●●
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●				●●●				●●●				●●●			●●●
		Volatile suspended solids (VSS)	●●●																
9	Total metals	Aluminum				●●●				●●●				●●●				●●●	●●●
		Beryllium				●●●				●●●				●●●				●●●	●●●
		Cadmium				●●●				●●●				●●●				●●●	●●●
		Chromium				●●●				●●●				●●●				●●●	●●●
		Cobalt				●●●				●●●				●●●				●●●	●●●
		Copper			●●●					●●●		●●●						●●●	●●●
		Lead				●●●				●●●				●●●				●●●	●●●
		Molybdenum				●●●				●●●				●●●				●●●	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE E - CELANESE CANADA INC. (KINGSTON)

		STREAM CLASSIFICATION AND IMIS CODE:	PR 0400				CO 0100				CO 0200				CO 0300				ST 0700
		TOXICITY TESTS REQUIRED:	No				Yes				Yes				Yes				No
		CHARACTERIZATION FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly				None
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart				
		CHARACTERIZATION FREQUENCY FOR AT6 24:	Semi-annually				Quarterly				Quarterly				Quarterly				None
		INTERVAL:	6-8 months apart				2-4 months apart				2-4 months apart				2-4 months apart				
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																	
9	Total metals (continued)	Nickel				●●●				●●●				●●●				●●●	●●●
		Silver				●●●				●●●				●●●				●●●	●●●
		Thallium				●●●				●●●				●●●				●●●	●●●
		Vanadium				●●●				●●●				●●●				●●●	●●●
		Zinc			●●●					●●●				●●●				●●●	●●●
10	Hydrides	Antimony				●●●				●●●				●●●				●●●	●●●
		Arsenic				●●●				●●●				●●●				●●●	●●●
		Selenium				●●●				●●●				●●●				●●●	●●●
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)				●●●				●●●				●●●				●●●	●●●
14	Phenolics (4AAP)	Phenolics (4AAP)*		●●●					●●●				●●●				●●●		●●●
25	Solvent Extractables	Oil and grease			●●●				●●●				●●●				●●●		●●●

EFFLUENT MONITORING REGULATION – ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE E – CELANESE CANADA INC. (KINGSTON)

		STREAM CLASSIFICATION AND IMIS CODE:	ST 0800	EM 0500
		TOXICITY TESTS REQUIRED:	No	No
		CHARACTERIZATION FREQUENCY (except for AT6 24): INTERVAL:	None	None
		CHARACTERIZATION FREQUENCY FOR AT6 24: INTERVAL:	None	None
		FREQUENCY OF SAMPLING:	M	during discharge
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**		
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●	●●●
4a	Nitrogen	Ammonia plus Ammonium		
		Total Kjeldahl nitrogen		
4b		Nitrate + Nitrite		
5a	Organic carbon (DOC)	Dissolved organic carbon (DOC)	●●●	●●●
5b		Total organic carbon (TOC) (NOTE 1)	●●●	●●●
6	Total phosphorus	Total phosphorus	●●●	●●●
7	Specific conductance	Specific conductance	●●●	●●●
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)	●●●	●●●
		Volatile suspended solids (VSS)	●●●	
9	Total metals	Aluminum	●●●	●●●
		Beryllium	●●●	●●●
		Cadmium	●●●	●●●
		Chromium	●●●	●●●
		Cobalt	●●●	●●●
		Copper	●●●	●●●
		Lead	●●●	●●●
		Molybdenum	●●●	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE E - CELANESE CANADA INC. (KINGSTON)

		STREAM CLASSIFICATION AND IMIS CODE:	ST 0800	EM 0500
		TOXICITY TESTS REQUIRED:	No	No
		CHARACTERIZATION FREQUENCY (except for AT6 24): INTERVAL:	None	None
		CHARACTERIZATION FREQUENCY FOR AT6 24: INTERVAL:	None	None
		FREQUENCY OF SAMPLING:	M	during discharge
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**		
9	Total metals (continued)	Nickel	●●●	●●●
		Silver	●●●	●●●
		Thallium	●●●	●●●
		Vanadium	●●●	●●●
		Zinc	●●●	●●●
10	Hydrides	Antimony	●●●	●●●
		Arsenic	●●●	●●●
		Selenium	●●●	●●●
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)	●●●	●●●
14	Phenolics (4AAP)	Phenolics (4AAP)*	●●●	●●●
25	Solvent Extractables	Oil and grease	●●●	●●●

EFFLUENT MONITORING REGULATION – ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE F – CORNWALL CHEMICALS LIMITED (CORNWALL)

		STREAM CLASSIFICATION AND IMIS CODE:	PR 0100			
		TOXICITY TESTS REQUIRED:	Yes			
		CHARACTERIZATION FREQUENCY (except for AT6 24):	Quarterly			
		INTERVAL:	2-4 months apart			
		CHARACTERIZATION FREQUENCY FOR AT6 24:	Semi-annually			
		INTERVAL:	6-8 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**				
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●			
5a	Organic carbon (DOC)	Dissolved organic carbon (DOC)	●●●			
5b		Total organic carbon (TOC) (NOTE 1)		●●●		
6	Total phosphorus	Total phosphorus			●●●	
7	Specific conductance	Specific conductance	●●●			
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●		
		Volatile suspended solids (VSS)				
9	Total metals	Aluminum				●●●
		Beryllium				●●●
		Cadmium				●●●
		Chromium				●●●
		Cobalt				●●●
		Copper				●●●
		Lead				●●●
		Molybdenum				●●●
		Nickel				●●●
		Silver				●●●
		Thallium				●●●
		Vanadium				●●●
		Zinc		●●●		

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE F - CORNWALL CHEMICALS LIMITED (CORNWALL)

STREAM CLASSIFICATION AND IMIS CODE:			PR 0100			
TOXICITY TESTS REQUIRED:			Yes			
CHARACTERIZATION FREQUENCY (except for AT6 24):			Quarterly			
INTERVAL:			2-4 months apart			
CHARACTERIZATION FREQUENCY FOR AT6 24:			Semi-annually			
INTERVAL:			6-8 months apart			
FREQUENCY OF SAMPLING:			D	TW	W	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**				
10	Hydrides	Antimony				●●●
		Arsenic				●●●
		Selenium				●●●
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)				●●●
12	Mercury	Mercury		●●●		
15	Sulphide	Sulphide		●●●		
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane				●●●
		1,1,2-Trichloroethane				●●●
		1,1-Dichloroethane				●●●
		1,1-Dichloroethylene				●●●
		1,2-Dichlorobenzene				●●●
		1,2-Dichloroethane (Ethylene dichloride)				●●●
		1,2-Dichloropropane				●●●
		1,3-Dichlorobenzene		●●●		
		1,4-Dichlorobenzene				●●●
		Bromoform				●●●
		Bromomethane				●●●
		Carbon tetrachloride		●●●		
		Chlorobenzene				●●●
		Chloroform		●●●		
		Chloromethane				●●●
		Cis-1,3-Dichloropropylene				●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE F - CORNWALL CHEMICALS LIMITED (CORNWALL)

STREAM CLASSIFICATION AND IMIS CODE:			PR 0100			
TOXICITY TESTS REQUIRED:			Yes			
CHARACTERIZATION FREQUENCY (except for AT6 24):			Quarterly			
INTERVAL:			2-4 months apart			
CHARACTERIZATION FREQUENCY FOR AT6 24:			Semi-annually			
INTERVAL:			6-8 months apart			
FREQUENCY OF SAMPLING:			D	TW	W	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**				
16	Volatiles, Halogenated (continued)	Dibromochloromethane				●●●
		Ethylene dibromide				●●●
		Methylene chloride		●●●		
		Tetrachloroethylene (Perchloroethylene)		●●●		
		Trans-1,2-Dichloroethylene				●●●
		Trans-1,3-Dichloropropylene				●●●
		Trichloroethylene		●●●		
		Trichlorofluoromethane				●●●
		Vinyl chloride (Chloroethylene)				●●●
17	Volatiles, Non-Halogenated	Benzene		●●●		
		Styrene				●●●
		Toluene		●●●		
		o-Xylene		●●●		
		m-Xylene and p-Xylene (NOTE 3)		●●●		

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE F - CORNWALL CHEMICALS LIMITED (CORNWALL)

		STREAM CLASSIFICATION AND IMIS CODE:	PR 0100			
		TOXICITY TESTS REQUIRED:	Yes			
		CHARACTERIZATION FREQUENCY (except for AT6 24):	Quarterly			
		INTERVAL:	2-4 months apart			
		CHARACTERIZATION FREQUENCY FOR AT6 24:	Semi-annually			
		INTERVAL:	6-8 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**				
23	Extractables, Neutral -Chlorinated	1,2,3,4-Tetrachlorobenzene				●●●
		1,2,3,5-Tetrachlorobenzene				●●●
		1,2,4,5-Tetrachlorobenzene				●●●
		1,2,3-Trichlorobenzene				●●●
		1,2,4-Trichlorobenzene				●●●
		2,4,5-Trichlorotoluene				●●●
		Hexachlorobenzene				●●●
		Hexachlorobutadiene				●●●
		Hexachlorocyclopentadiene				●●●
		Hexachloroethane				●●●
		Octachlorostyrene				●●●
		Pentachlorobenzene				●●●
25	Solvent Extractables	Oil and grease			●●●	

EFFLUENT MONITORING REGULATION – ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE 6 – COURTAULDS FIBRES CANADA, A DIVISION OF COURTAULDS FIBERS INC. (CORNWALL)

		STREAM CLASSIFICATION AND IMIS CODE:	PR 0100				PR 0300				CO 0500				CO 0600			
		TOXICITY TESTS REQUIRED:	Yes				Yes				Yes				Yes			
		CHARACTERIZATION FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		CHARACTERIZATION FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●				●●●				●●●			
4a	Nitrogen	Ammonia plus Ammonium								●●●								
		Total Kjeldahl nitrogen								●●●								
4b		Nitrate + Nitrite			●●●				●●●									
5a	Organic carbon (DOC)	Dissolved organic carbon (DOC)	●●●				●●●				●●●				●●●			
5b		Total organic carbon (TOC) (NOTE 1)		●●●				●●●				●●●				●●●		
6	Total phosphorus	Total phosphorus			●●●				●●●				●●●				●●●	
7	Specific conductance	Specific conductance	●●●				●●●				●●●				●●●			
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●				●●●				●●●				●●●		
		Volatile suspended solids (VSS)			●●●				●●●				●●●				●●●	
9	Total metals	Aluminum		●●●				●●●						●●●				●●●
		Beryllium				●●●				●●●				●●●				●●●
		Cadmium				●●●				●●●				●●●				●●●
		Chromium		●●●						●●●			●●●					●●●
		Cobalt				●●●				●●●				●●●				●●●
		Copper				●●●		●●●						●●●				●●●
		Lead		●●●						●●●				●●●				●●●
		Molybdenum				●●●				●●●				●●●				●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE 6 - COURTAULDS FIBRES CANADA, A DIVISION OF COURTAULDS FIBERS INC. (CORNWALL)

		STREAM CLASSIFICATION AND IMIS CODE:	PR 0100				PR 0300				CO 0500				CO 0600			
		TOXICITY TESTS REQUIRED:	Yes				Yes				Yes				Yes			
		CHARACTERIZATION FREQUENCY (except for ATG 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		CHARACTERIZATION FREQUENCY FOR ATG 24:	Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																
9	Total metals (continued)	Nickel				●●●				●●●				●●●				●●●
		Silver				●●●				●●●				●●●				●●●
		Thallium				●●●				●●●				●●●				●●●
		Vanadium				●●●				●●●				●●●				●●●
		Zinc		●●●				●●●				●●●				●●●		
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)		●●●						●●●			●●●					●●●
12	Mercury	Mercury		●●●				●●●						●●●				●●●
14	Phenolics (4AAP)	Phenolics (4AAP)*		●●●					●●●				●●●					
15	Sulphide	Sulphide		●●●				●●●				●●●				●●●		
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane				●●●				●●●				●●●				●●●
		1,1,2-Trichloroethane				●●●				●●●				●●●				●●●
		1,1-Dichloroethane				●●●				●●●				●●●				●●●
		1,1-Dichloroethylene				●●●				●●●				●●●				●●●
		1,2-Dichlorobenzene				●●●				●●●		●●●						●●●
		1,2-Dichloroethane (Ethylene dichloride)				●●●				●●●				●●●				●●●
		1,2-Dichloropropane				●●●				●●●				●●●				●●●
		1,3-Dichlorobenzene				●●●				●●●				●●●				●●●
		1,4-Dichlorobenzene				●●●				●●●				●●●				●●●
		Bromoform				●●●				●●●				●●●				●●●
		Bromomethane				●●●				●●●				●●●				●●●
		Carbon tetrachloride				●●●				●●●				●●●				●●●

EFFLUENT MONITORING REGULATION – ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE 6 – COURTAULDS FIBRES CANADA, A DIVISION OF COURTAULDS FIBERS INC. (CORNWALL)

STREAM CLASSIFICATION AND IMIS CODE:			PR 0100				PR 0300				CO 0500				CO 0600			
TOXICITY TESTS REQUIRED:			Yes				Yes				Yes				Yes			
CHARACTERIZATION FREQUENCY (except for ATG 24):			Quarterly				Quarterly				Quarterly				Quarterly			
INTERVAL:			2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
CHARACTERIZATION FREQUENCY FOR ATG 24:			Quarterly				Quarterly				Quarterly				Quarterly			
INTERVAL:			2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
FREQUENCY OF SAMPLING:			D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED																
16	Volatiles, Halogenated (continued)	Chlorobenzene				●●●				●●●				●●●				●●●
		Chloroform		●●●				●●●						●●●				●●●
		Chloromethane				●●●				●●●				●●●				●●●
		Cis-1,3-Dichloropropylene				●●●				●●●				●●●				●●●
		Dibromochloromethane				●●●				●●●				●●●				●●●
		Ethylene dibromide				●●●				●●●				●●●				●●●
		Methylene chloride				●●●				●●●				●●●				●●●
		Tetrachloroethylene (Perchloroethylene)				●●●				●●●				●●●				●●●
		Trans-1,2-Dichloroethylene				●●●				●●●				●●●				●●●
		Trans-1,3-Dichloropropylene				●●●				●●●				●●●				●●●
		Trichloroethylene				●●●				●●●				●●●				●●●
		Trichlorofluoromethane				●●●				●●●				●●●				●●●
		Vinyl chloride (Chloroethylene)				●●●				●●●				●●●				●●●
17	Volatiles, Non-Halogenated	Benzene				●●●				●●●				●●●				
		Styrene				●●●				●●●				●●●				
		Toluene				●●●			●●●			●●●						
		o-Xylene				●●●				●●●				●●●				
		m-Xylene and p-Xylene (NOTE 3)				●●●				●●●				●●●				
20	Extractables, Acid (Phenolics)	2,3,4,5-Tetrachlorophenol				●●●				●●●				●●●				
		2,3,4,6-Tetrachlorophenol				●●●				●●●				●●●				
		2,3,5,6-Tetrachlorophenol				●●●				●●●				●●●				
		2,3,4-Trichlorophenol				●●●				●●●				●●●				
		2,3,5-Trichlorophenol				●●●				●●●				●●●				
		2,4,5-Trichlorophenol				●●●				●●●				●●●				

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE 6 - COURTAULDS FIBRES CANADA, A DIVISION OF COURTAULDS FIBERS INC. (CORNWALL)

		STREAM CLASSIFICATION AND IMIS CODE:	PR 0100				PR 0300				CO 0500				CO 0600			
		TOXICITY TESTS REQUIRED:	Yes				Yes				Yes				Yes			
		CHARACTERIZATION FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		CHARACTERIZATION FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																
20	Extractables, Acid (Phenolics) (continued)	2,4,6-Trichlorophenol				●●●				●●●				●●●				
		2,4-Dimethyl phenol				●●●				●●●				●●●				
		2,4-Dinitrophenol				●●●				●●●				●●●				
		2,4-Dichlorophenol				●●●				●●●				●●●				
		2,6-Dichlorophenol				●●●				●●●				●●●				
		4,6-Dinitro-o-cresol				●●●				●●●				●●●				
		2-Chlorophenol				●●●				●●●				●●●				
		4-Chloro-3-methylphenol				●●●				●●●				●●●				
		4-Nitrophenol				●●●				●●●				●●●				
		m-Cresol				●●●				●●●				●●●				
		o-Cresol				●●●				●●●				●●●				
		p-Cresol				●●●				●●●				●●●				
		Pentachlorophenol				●●●		●●●						●●●				
		Phenol				●●●				●●●				●●●				
25	Solvent Extractables	Oil and grease			●●●				●●●				●●●				●●●	

EFFLUENT MONITORING REGULATION – ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE 6 – COURTAULDS FIBRES CANADA, A DIVISION OF COURTAULDS FIBERS INC. (CORNWALL)

STREAM CLASSIFICATION AND IMIS CODE:			CO 0700				CO 0800			
TOXICITY TESTS REQUIRED:			Yes				Yes			
CHARACTERIZATION FREQUENCY (except for AT6 24):			Quarterly				Quarterly			
INTERVAL:			2-4 months apart				2-4 months apart			
CHARACTERIZATION FREQUENCY FOR AT6 24:			Quarterly				Quarterly			
INTERVAL:			2-4 months apart				2-4 months apart			
FREQUENCY OF SAMPLING:			D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**								
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●			
4a	Nitrogen	Ammonia plus Ammonium								
		Total Kjeldahl nitrogen								
4b		Nitrate + Nitrite								
5a	Organic carbon (DOC)	Dissolved organic carbon (DOC)	●●●				●●●			
5b		Total organic carbon (TOC) (NOTE 1)		●●●				●●●		
6	Total phosphorus	Total phosphorus			●●●				●●●	
7	Specific conductance	Specific conductance	●●●				●●●			
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●				●●●		
		Volatile suspended solids (VSS)			●●●				●●●	
9	Total metals	Aluminum				●●●				●●●
		Beryllium				●●●				●●●
		Cadmium				●●●				●●●
		Chromium				●●●				●●●
		Cobalt				●●●				●●●
		Copper				●●●				●●●
		Lead				●●●				●●●
		Molybdenum				●●●				●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE 6 - COURTAULDS FIBRES CANADA, A DIVISION OF COURTAULDS FIBERS INC. (CORNWALL)

		STREAM CLASSIFICATION AND IMIS CODE:	CO 0700				CO 0800			
		TOXICITY TESTS REQUIRED:	Yes				Yes			
		CHARACTERIZATION FREQUENCY (except for ATG 24):	Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart			
		CHARACTERIZATION FREQUENCY FOR ATG 24:	Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED								
9	Total metals (continued)	Nickel				●●●				●●●
		Silver				●●●				●●●
		Thallium				●●●				●●●
		Vanadium				●●●				●●●
		Zinc		●●●				●●●		
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)				●●●				●●●
12	Mercury	Mercury				●●●				●●●
14	Phenolics (4AAP)	Phenolics (4AAP)*								
15	Sulphide	Sulphide		●●●				●●●		
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane								●●●
		1,1,2-Trichloroethane								●●●
		1,1-Dichloroethane								●●●
		1,1-Dichloroethylene								●●●
		1,2-Dichlorobenzene								●●●
		1,2-Dichloroethane (Ethylene dichloride)								●●●
		1,2-Dichloropropane								●●●
		1,3-Dichlorobenzene								●●●
		1,4-Dichlorobenzene								●●●
		Bromoform								●●●
		Bromomethane								●●●
		Carbon tetrachloride								●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE 6 - COURTAULDS FIBRES CANADA, A DIVISION OF COURTAULDS FIBERS INC. (CORNWALL)

STREAM CLASSIFICATION AND IMIS CODE:			CO 0700				CO 0800			
TOXICITY TESTS REQUIRED:			Yes				Yes			
CHARACTERIZATION FREQUENCY (except for ATG 24):			Quarterly				Quarterly			
INTERVAL:			2-4 months apart				2-4 months apart			
CHARACTERIZATION FREQUENCY FOR ATG 24:			Quarterly				Quarterly			
INTERVAL:			2-4 months apart				2-4 months apart			
FREQUENCY OF SAMPLING:			D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**								
16	Volatiles, Halogenated (continued)	Chlorobenzene								●●●
		Chloroform								●●●
		Chloromethane								●●●
		Cis-1,3-Dichloropropylene								●●●
		Dibromochloromethane								●●●
		Ethylene dibromide								●●●
		Methylene chloride								●●●
		Tetrachloroethylene (Perchloroethylene)								●●●
		Trans-1,2-Dichloroethylene								●●●
		Trans-1,3-Dichloropropylene								●●●
		Trichloroethylene								●●●
		Trichlorofluoromethane								●●●
		Vinyl chloride (Chloroethylene)								●●●
17	Volatiles, Non-Halogenated	Benzene								
		Styrene								
		Toluene								
		o-Xylene								
		m-Xylene and p-Xylene (NOTE 3)								
20	Extractables, Acid (Phenolics)	2,3,4,5-Tetrachlorophenol								
		2,3,4,6-Tetrachlorophenol								
		2,3,5,6-Tetrachlorophenol								
		2,3,4-Trichlorophenol								
		2,3,5-Trichlorophenol								
		2,4,5-Trichlorophenol								

SCHEDULE 6 – COURTAULDS FIBRES CANADA, A DIVISION OF COURTAULDS FIBERS INC. (CORNWALL)

STREAM CLASSIFICATION AND IMIS CODE:			CO 0700				CO 0800			
TOXICITY TESTS REQUIRED:			Yes				Yes			
CHARACTERIZATION FREQUENCY (except for AT6 24):			Quarterly				Quarterly			
INTERVAL:			2-4 months apart				2-4 months apart			
CHARACTERIZATION FREQUENCY FOR AT6 24:			Quarterly				Quarterly			
INTERVAL:			2-4 months apart				2-4 months apart			
FREQUENCY OF SAMPLING:			D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**								
20	Extractables, Acid (Phenolics) (continued)	2,4,6-Trichlorophenol								
		2,4-Dimethyl phenol								
		2,4-Dinitrophenol								
		2,4-Dichlorophenol								
		2,6-Dichlorophenol								
		4,6-Dinitro-o-cresol								
		2-Chlorophenol								
		4-Chloro-3-methylphenol								
		4-Nitrophenol								
		m-Cresol								
		o-Cresol								
		p-Cresol								
		Pentachlorophenol								
		Phenol								
25	Solvent Extractables	Oil and grease			●●●				●●●	

EFFLUENT MONITORING REGULATION – ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE H – COURTAULDS FILMS, A DIVISION OF INTERNATIONAL PAINTS (CORNWALL)

STREAM CLASSIFICATION AND IMIS CODE			PR 0200				PR 1000				CO 1100			
TOXICITY TEST REQUIRED:			No				No				Yes			
CHARACTERIZATION FREQUENCY (except for AT6 24):			Quarterly				Quarterly				Quarterly			
INTERVAL:			2-4 months apart				2-4 months apart				2-4 months apart			
CHARACTERIZATION FREQUENCY FOR AT6 24:			Quarterly				Quarterly				Quarterly			
INTERVAL:			2-4 months apart				2-4 months apart				2-4 months apart			
FREQUENCY OF SAMPLING:			D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED												
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●				●●●			
4a	Nitrogen	Ammonia plus Ammonium				●●●								
		Total Kjeldahl nitrogen				●●●								
4b		Nitrate + Nitrite		●●●					●●●					
5a	Organic carbon (DOC)	Dissolved organic carbon (DOC)	●●●					●●●			●●●			
5b		Total organic carbon (TOC) (NOTE 1)		●●●				●●●				●●●		
6	Total phosphorus	Total phosphorus				●●●				●●●			●●●	
7	Specific conductance	Specific conductance	●●●				●●●				●●●			
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●				●●●				●●●		
		Volatile suspended solids (VSS)			●●●				●●●				●●●	
9	Total metals	Aluminum				●●●				●●●		●●●		
		Beryllium				●●●				●●●				●●●
		Cadmium				●●●				●●●				●●●
		Chromium				●●●				●●●				●●●
		Cobalt				●●●				●●●				●●●
		Copper				●●●				●●●		●●●		
		Lead				●●●				●●●				●●●
		Molybdenum				●●●				●●●				●●●

EFFLUENT MONITORING REGULATION – ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE H – COURTAULDS FILMS, A DIVISION OF INTERNATIONAL PAINTS (CORNWALL)

STREAM CLASSIFICATION AND IMIS CODE			PR 0200				PR 1000				CO 1100			
TOXICITY TEST REQUIRED:			No				No				Yes			
CHARACTERIZATION FREQUENCY (except for AT6 24):			Quarterly				Quarterly				Quarterly			
INTERVAL:			2-4 months apart				2-4 months apart				2-4 months apart			
CHARACTERIZATION FREQUENCY FOR AT6 24:			Quarterly				Quarterly				Quarterly			
INTERVAL:			2-4 months apart				2-4 months apart				2-4 months apart			
FREQUENCY OF SAMPLING:			D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED												
9	Total metals (continued)	Nickel				●●●				●●●				●●●
		Silver				●●●				●●●				●●●
		Thallium				●●●				●●●				●●●
		Vanadium				●●●				●●●				●●●
		Zinc				●●●				●●●				●●●
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)				●●●				●●●				●●●
12	Mercury	Mercury			●●●				●●●					●●●
14	Phenolics (4AAP)	Phenolics (4AAP)*			●●●				●●●					●●●
15	Sulphide	Sulphide			●●●				●●●					●●●
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane				●●●				●●●				
		1,1,2-Trichloroethane				●●●				●●●				
		1,1-Dichloroethane				●●●				●●●				
		1,1-Dichloroethylene				●●●				●●●				
		1,2-Dichlorobenzene				●●●				●●●				
		1,2-Dichloroethane (Ethylene dichloride)				●●●				●●●				
		1,2-Dichloropropane				●●●				●●●				
		1,3-Dichlorobenzene				●●●				●●●				
		1,4-Dichlorobenzene				●●●				●●●				
		Bromoform				●●●				●●●				
		Bromomethane				●●●				●●●				
		Carbon tetrachloride				●●●				●●●				

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE H - COURTAULDS FILMS, A DIVISION OF INTERNATIONAL PAINTS (CORNWALL)

STREAM CLASSIFICATION AND IMIS CODE			PR 0200				PR 1000				CO 1100			
TOXICITY TEST REQUIRED:			No				No				Yes			
CHARACTERIZATION FREQUENCY (except for AT6 24):			Quarterly				Quarterly				Quarterly			
INTERVAL:			2-4 months apart				2-4 months apart				2-4 months apart			
CHARACTERIZATION FREQUENCY FOR AT6 24:			Quarterly				Quarterly				Quarterly			
INTERVAL:			2-4 months apart				2-4 months apart				2-4 months apart			
FREQUENCY OF SAMPLING:			D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED												
16	Volatiles, Halogenated (continued)	Chlorobenzene				●●●				●●●				
		Chloroform				●●●				●●●				
		Chloromethane				●●●				●●●				
		Cis-1,3-Dichloropropylene				●●●				●●●				
		Dibromochloromethane				●●●				●●●				
		Ethylene dibromide				●●●				●●●				
		Methylene chloride				●●●				●●●				
		Tetrachloroethylene (Perchloroethylene)				●●●				●●●				
		Trans-1,2-Dichloroethylene				●●●				●●●				
		Trans-1,3-Dichloropropylene				●●●				●●●				
		Trichloroethylene				●●●				●●●				
		Trichlorofluoromethane				●●●				●●●				
		Vinyl chloride (Chloroethylene)				●●●				●●●				
17	Volatiles, Non-Halogenated	Benzene				●●●				●●●				●●●
		Styrene				●●●				●●●				●●●
		Toluene		●●●				●●●				●●●		
		o-Xylene				●●●				●●●				●●●
		m-Xylene and p-Xylene (NOTE 3)				●●●				●●●				●●●
20	Extractables, Acid (Phenolics)	2,3,4,5-Tetrachlorophenol				●●●				●●●				
		2,3,4,6-Tetrachlorophenol				●●●				●●●				
		2,3,5,6-Tetrachlorophenol				●●●				●●●				
		2,3,4-Trichlorophenol				●●●				●●●				
		2,3,5-Trichlorophenol				●●●				●●●				
		2,4,5-Trichlorophenol				●●●				●●●				

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE H - COURTAULDS FILMS, A DIVISION OF INTERNATIONAL PAINTS (CORNWALL)

		STREAM CLASSIFICATION AND IMIS CODE	PR 0200				PR 1000				CO 1100			
		TOXICITY TEST REQUIRED:	No				No				Yes			
		CHARACTERIZATION FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart			
		CHARACTERIZATION FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED												
20	Extractables, Acid (Phenolics) (continued)	2,4,6-Trichlorophenol				●●●				●●●				
		2,4-Dimethyl phenol				●●●				●●●				
		2,4-Dinitrophenol				●●●				●●●				
		2,4-Dichlorophenol				●●●				●●●				
		2,6-Dichlorophenol				●●●				●●●				
		4,6-Dinitro-o-cresol				●●●				●●●				
		2-Chlorophenol				●●●				●●●				
		4-Chloro-3-methylphenol				●●●				●●●				
		4-Nitrophenol				●●●				●●●				
		m-Cresol				●●●				●●●				
		o-Cresol				●●●				●●●				
		p-Cresol				●●●				●●●				
		Pentachlorophenol				●●●				●●●				
		Phenol				●●●				●●●				
25	Solvent Extractables	Oil and grease			●●●				●●●				●●●	

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE I - DOMTAR INC. (LONGFORD MILLS)

		STREAM CLASSIFICATION AND IMIS CODE:	PR 0200				CO 0100				EM 0400
		TOXICITY TESTS REQUIRED:	No				Yes				No
		CHARACTERIZATION FREQUENCY (except for AT6 24):	Quarterly				Quarterly				None
		INTERVAL:	2-4 months apart				2-4 months apart				
		CHARACTERIZATION FREQUENCY FOR AT6 24:	Quarterly				Quarterly				None
		INTERVAL:	2-4 months apart				2-4 months apart				
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	during discharge
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**									
2	Cyanide	Cyanide				●●●				●●●	●●●
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●				●●●
4a	Nitrogen	Ammonia plus Ammonium		●●●						●●●	●●●
		Total Kjeldahl nitrogen		●●●						●●●	●●●
4b		Nitrate + Nitrite		●●●						●●●	●●●
5a	Organic carbon (DOC)	Dissolved organic carbon (DOC)		●●●			●●●				●●●
5b		Total organic carbon (TOC) (NOTE 1)		●●●				●●●			●●●
6	Total phosphorus	Total phosphorus		●●●					●●●		●●●
7	Specific conductance	Specific conductance	●●●				●●●				●●●
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●				●●●			●●●
		Volatile suspended solids (VSS)	●●●								
9	Total metals	Aluminum		●●●						●●●	●●●
		Beryllium				●●●				●●●	●●●
		Cadmium				●●●				●●●	●●●
		Chromium				●●●				●●●	●●●
		Cobalt				●●●				●●●	●●●
		Copper		●●●						●●●	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE I - DOMTAR INC. (LONGFORD MILLS)

		STREAM CLASSIFICATION AND IMIS CODE:	PR 0200				CO 0100				EM 0400
		TOXICITY TESTS REQUIRED:	No				Yes				No
		CHARACTERIZATION FREQUENCY (except for ATG 24):	Quarterly				Quarterly				None
		INTERVAL:	2-4 months apart				2-4 months apart				
		CHARACTERIZATION FREQUENCY FOR ATG 24:	Quarterly				Quarterly				None
		INTERVAL:	2-4 months apart				2-4 months apart				
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	during discharge
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED									
9	Total metals (continued)	Lead				●●●				●●●	●●●
		Molybdenum				●●●				●●●	●●●
		Nickel				●●●				●●●	●●●
		Silver				●●●				●●●	●●●
		Thallium				●●●				●●●	●●●
		Vanadium				●●●				●●●	●●●
		Zinc		●●●						●●●	●●●
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)				●●●				●●●	●●●
12	Mercury	Mercury			●●●					●●●	●●●
14	Phenolics (4AAP)	Phenolics (4AAP)*		●●●						●●●	●●●
15	Sulphide	Sulphide				●●●				●●●	●●●
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane				●●●				●●●	●●●
		1,1,2-Trichloroethane				●●●				●●●	●●●
		1,1-Dichloroethane				●●●				●●●	●●●
		1,1-Dichloroethylene				●●●				●●●	●●●
		1,2-Dichlorobenzene				●●●				●●●	●●●
		1,2-Dichloroethane (Ethylene dichloride)				●●●				●●●	●●●
		1,2-Dichloropropane				●●●				●●●	●●●
		1,3-Dichlorobenzene				●●●				●●●	●●●
		1,4-Dichlorobenzene				●●●				●●●	●●●
		Bromoform				●●●				●●●	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE I - DOMTAR INC. (LONGFORD MILLS)

STREAM CLASSIFICATION AND IMIS CODE:			PR 0200				CO 0100				EM 0400
TOXICITY TESTS REQUIRED:			No				Yes				No
CHARACTERIZATION FREQUENCY (except for AT6 24):			Quarterly				Quarterly				None
INTERVAL:			2-4 months apart				2-4 months apart				
CHARACTERIZATION FREQUENCY FOR AT6 24:			Quarterly				Quarterly				None
INTERVAL:			2-4 months apart				2-4 months apart				
FREQUENCY OF SAMPLING:			D	TW	W	M	D	TW	W	M	during discharge
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**									
16	Volatiles, Halogenated (continued)	Bromomethane				●●●				●●●	●●●
		Carbon tetrachloride		●●●						●●●	●●●
		Chlorobenzene				●●●				●●●	●●●
		Chloroform		●●●						●●●	●●●
		Chloromethane				●●●				●●●	●●●
		Cis-1,3-Dichloropropylene				●●●				●●●	●●●
		Dibromochloromethane				●●●				●●●	●●●
		Ethylene dibromide				●●●				●●●	●●●
		Methylene chloride				●●●				●●●	●●●
		Tetrachloroethylene (Perchloroethylene)				●●●				●●●	●●●
		Trans-1,2-Dichloroethylene				●●●				●●●	●●●
		Trans-1,3-Dichloropropylene				●●●				●●●	●●●
		Trichloroethylene				●●●				●●●	●●●
		Trichlorofluoromethane				●●●				●●●	●●●
		Vinyl chloride (Chloroethylene)				●●●				●●●	●●●
25	Solvent Extractables	Oil and grease		●●●					●●●		●●●
27	PCBs	PCBs (Total)				●●●				●●●	●●●

EFFLUENT MONITORING REGULATION – ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE J – DOW CHEMICAL CANADA INC. (SARNIA)

		STREAM CLASSIFICATION AND IMIS CODE:	PR 1200				PR 1300				PR 1400				PR 1500			
		TOXICITY TESTS REQUIRED:	No				No				No				No			
		CHARACTERIZATION FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		CHARACTERIZATION FREQUENCY FOR AT6 24:	Semi-annually				Semi-annually				Semi-annually				Semi-annually			
		INTERVAL:	6-8 months apart				6-8 months apart				6-8 months apart				6-8 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																
2	Cyanide	Cyanide										●●●						
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●				●●●				●●●			
4a	Nitrogen	Ammonia plus Ammonium							●●●			●●●						●●●
		Total Kjeldahl nitrogen							●●●			●●●						●●●
4b		Nitrate + Nitrite			●●●				●●●					●●●				●●●
5a	Organic carbon (DOC)	Dissolved organic carbon (DOC)		●●●				●●●				●●●				●●●		
5b		Total organic carbon (TOC) (NOTE 1)		●●●				●●●				●●●				●●●		
6	Total phosphorus	Total phosphorus				●●●				●●●				●●●				●●●
7	Specific conductance	Specific conductance	●●●				●●●				●●●				●●●			
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●				●●●				●●●				●●●		
		Volatile suspended solids (VSS)																
9	Total metals	Aluminum				●●●		●●●						●●●				●●●
		Beryllium				●●●				●●●				●●●				●●●
		Cadmium				●●●				●●●				●●●				●●●
		Chromium				●●●				●●●				●●●				●●●
		Cobalt				●●●				●●●				●●●				●●●
		Copper				●●●		●●●				●●●				●●●		

		STREAM CLASSIFICATION AND IMIS CODE:	PR 1200				PR 1300				PR 1400				PR 1500			
		TOXICITY TESTS REQUIRED:	No				No				No				No			
		CHARACTERIZATION FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		CHARACTERIZATION FREQUENCY FOR AT6 24:	Semi-annually				Semi-annually				Semi-annually				Semi-annually			
		INTERVAL:	6-8 months apart				6-8 months apart				6-8 months apart				6-8 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																
9	Total metals (continued)	Lead				●●●				●●●				●●●				●●●
		Molybdenum				●●●				●●●				●●●				●●●
		Nickel				●●●				●●●				●●●				●●●
		Silver				●●●				●●●				●●●				●●●
		Thallium				●●●				●●●				●●●				●●●
		Vanadium				●●●				●●●				●●●				●●●
		Zinc				●●●		●●●						●●●				●●●
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)				●●●				●●●				●●●				●●●
12	Mercury	Mercury				●●●			●●●			●●●						●●●
14	Phenolics (4AAP)	Phenolics (4AAP)*		●●●				●●●				●●●				●●●		
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane				●●●								●●●				
		1,1,2-Trichloroethane				●●●								●●●				
		1,1-Dichloroethane				●●●								●●●				
		1,1-Dichloroethylene				●●●								●●●				
		1,2-Dichlorobenzene				●●●								●●●				
		1,2-Dichloroethane (Ethylene dichloride)				●●●								●●●				
		1,2-Dichloropropane				●●●								●●●				
		1,3-Dichlorobenzene				●●●								●●●				
		1,4-Dichlorobenzene				●●●								●●●				
		Bromoform				●●●								●●●				
		Bromomethane				●●●								●●●				
		Carbon tetrachloride				●●●						●●●						

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE J - DOW CHEMICAL CANADA INC. (SARNIA)

		STREAM CLASSIFICATION AND IMIS CODE:	PR 1200				PR 1300				PR 1400				PR 1500			
		TOXICITY TESTS REQUIRED:	No				No				No				No			
		CHARACTERIZATION FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		CHARACTERIZATION FREQUENCY FOR AT6 24:	Semi-annually				Semi-annually				Semi-annually				Semi-annually			
		INTERVAL:	6-8 months apart				6-8 months apart				6-8 months apart				6-8 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																
16	Volatiles, Halogenated (continued)	Chlorobenzene				●●●								●●●				
		Chloroform		●●●								●●●						
		Chloromethane				●●●								●●●				
		Cis-1,3-Dichloropropylene				●●●								●●●				
		Dibromochloromethane				●●●								●●●				
		Ethylene dibromide				●●●								●●●				
		Methylene chloride				●●●								●●●				
		Tetrachloroethylene (Perchloroethylene)				●●●								●●●				
		Trans-1,2-Dichloroethylene				●●●								●●●				
		Trans-1,3-Dichloropropylene				●●●								●●●				
		Trichloroethylene				●●●								●●●				
		Trichlorofluoromethane				●●●								●●●				
		Vinyl chloride (Chloroethylene)				●●●								●●●				
17	Volatiles, Non-Halogenated	Benzene		●●●						●●●				●●●				
		Styrene				●●●		●●●				●●●						
		Toluene				●●●		●●●						●●●				
		o-Xylene				●●●		●●●						●●●				
		m-Xylene and p-Xylene (NOTE 3)				●●●				●●●				●●●				
18	Volatiles, Water Soluble	Acrolein												●●●				
		Acrylonitrile												●●●				
19	Extractables, Base Neutral	Acenaphthene				●●●				●●●								
		5-nitro Acenaphthene				●●●				●●●								
		Acenaphthylene				●●●				●●●								

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE J - DOW CHEMICAL CANADA INC. (SARNIA)

			PR 1200				PR 1300				PR 1400				PR 1500			
STREAM CLASSIFICATION AND IMIS CODE:			PR 1200				PR 1300				PR 1400				PR 1500			
TOXICITY TESTS REQUIRED:			No				No				No				No			
CHARACTERIZATION FREQUENCY (except for ATG 24):			Quarterly				Quarterly				Quarterly				Quarterly			
INTERVAL:			2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
CHARACTERIZATION FREQUENCY FOR ATG 24:			Semi-annually				Semi-annually				Semi-annually				Semi-annually			
INTERVAL:			6-8 months apart				6-8 months apart				6-8 months apart				6-8 months apart			
FREQUENCY OF SAMPLING:			D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED																
19	Extractables, Base Neutral (continued)	Anthracene				●●●				●●●								
		Benz(a)anthracene				●●●				●●●								
		Benzo(a)pyrene				●●●				●●●								
		Benzo(b)fluoranthene				●●●				●●●								
		Benzo(g,h,i)perylene				●●●				●●●								
		Benzo(k)fluoranthene				●●●				●●●								
		Biphenyl				●●●				●●●								
		Camphene				●●●				●●●								
		1-Chloronaphthalene				●●●				●●●								
		2-Chloronaphthalene				●●●				●●●								
		Chrysene				●●●				●●●								
		Dibenz(a,h)anthracene				●●●				●●●								
		Fluoranthene				●●●				●●●								
		Fluorene				●●●				●●●								
		Indeno(1,2,3-cd)pyrene				●●●				●●●								
		Indole				●●●				●●●								
		1-Methylnaphthalene				●●●				●●●								
		2-Methylnaphthalene				●●●				●●●								
		Naphthalene				●●●				●●●								
		Perylene				●●●				●●●								
		Phenanthrene				●●●				●●●								
		Pyrene				●●●				●●●								
		Benzyl butyl phthalate																
		Bis(2-ethylhexyl) phthalate																
		Di-n-butyl phthalate																

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE J - DOW CHEMICAL CANADA INC. (SARNIA)

		STREAM CLASSIFICATION AND IMIS CODE:	PR 1200				PR 1300				PR 1400				PR 1500			
		TOXICITY TESTS REQUIRED:	No				No				No				No			
		CHARACTERIZATION FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		CHARACTERIZATION FREQUENCY FOR AT6 24:	Semi-annually				Semi-annually				Semi-annually				Semi-annually			
		INTERVAL:	6-8 months apart				6-8 months apart				6-8 months apart				6-8 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																
19	Extractables, Base Neutral (continued)	4-Bromophenyl phenyl ether																
		4-Chlorophenyl phenyl ether																
		Bis(2-chloroisopropyl)ether																
		Bis(2-chloroethyl)ether																
		Diphenyl ether																
		2,4-Dinitrotoluene																
		2,6-Dinitrotoluene																
		Bis(2-chloroethoxy)methane																
		Diphenylamine (NOTE 4)																
		N-Nitrosodiphenylamine (NOTE 4)																
		N-Nitrosodi-n-propylamine																
20	Extractables, Acid (Phenolics)	2,3,4,5-Tetrachlorophenol				●●●				●●●				●●●				●●●
		2,3,4,6-Tetrachlorophenol				●●●				●●●				●●●				●●●
		2,3,5,6-Tetrachlorophenol				●●●				●●●				●●●				●●●
		2,3,4-Trichlorophenol				●●●				●●●				●●●				●●●
		2,3,5-Trichlorophenol				●●●				●●●				●●●				●●●
		2,4,5-Trichlorophenol				●●●				●●●				●●●				●●●
		2,4,6-Trichlorophenol				●●●				●●●				●●●				●●●
		2,4-Dimethyl phenol				●●●				●●●				●●●				●●●
		2,4-Dinitrophenol				●●●				●●●				●●●				●●●
		2,4-Dichlorophenol				●●●				●●●				●●●				●●●
		2,6-Dichlorophenol				●●●				●●●				●●●				●●●
		4,6-Dinitro-o-cresol				●●●				●●●				●●●				●●●
		2-Chlorophenol				●●●				●●●				●●●				●●●
		4-Chloro-3-methylphenol				●●●				●●●				●●●				●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE J - DOW CHEMICAL CANADA INC. (SARNIA)

		STREAM CLASSIFICATION AND IMIS CODE:	PR 1200				PR 1300				PR 1400				PR 1500			
		TOXICITY TESTS REQUIRED:	No				No				No				No			
		CHARACTERIZATION FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		CHARACTERIZATION FREQUENCY FOR AT6 24:	Semi-annually				Semi-annually				Semi-annually				Semi-annually			
		INTERVAL:	6-8 months apart				6-8 months apart				6-8 months apart				6-8 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																
20	Extractables, Acid (Phenolics) (continued)	4-Nitrophenol				●●●				●●●				●●●				●●●
		m-Cresol				●●●				●●●				●●●				●●●
		o-Cresol				●●●				●●●				●●●				●●●
		p-Cresol				●●●				●●●				●●●				●●●
		Pentachlorophenol				●●●				●●●				●●●				●●●
		Phenol				●●●				●●●				●●●				●●●
23	Extractables, Neutral -Chlorinated	1,2,3,4-Tetrachlorobenzene				●●●								●●●				
		1,2,3,5-Tetrachlorobenzene				●●●								●●●				
		1,2,4,5-Tetrachlorobenzene				●●●								●●●				
		1,2,3-Trichlorobenzene				●●●								●●●				
		1,2,4-Trichlorobenzene				●●●								●●●				
		2,4,5-Trichlorotoluene				●●●								●●●				
		Hexachlorobenzene				●●●								●●●				
		Hexachlorobutadiene				●●●								●●●				
		Hexachlorocyclopentadiene				●●●								●●●				
		Hexachloroethane				●●●								●●●				
		Octachlorostyrene				●●●								●●●				
		Pentachlorobenzene				●●●								●●●				
24	Chlorinated Dibenzo-p-dioxins and Dibenzofurans	2,3,7,8-Tetrachlorodibenzo-p-dioxin				●●●												
		Octachlorodibenzo-p-dioxin				●●●												
		Octachlorodibenzofuran				●●●												
		Total heptachlorinated dibenzo-p-dioxins				●●●												
		Total heptachlorinated dibenzofurans				●●●												
		Total hexachlorinated dibenzo-p-dioxins				●●●												

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE J - DOW CHEMICAL CANADA INC. (SARNIA)

			PR 1200				PR 1300				PR 1400				PR 1500			
STREAM CLASSIFICATION AND IMIS CODE:			PR 1200				PR 1300				PR 1400				PR 1500			
TOXICITY TESTS REQUIRED:			No				No				No				No			
CHARACTERIZATION FREQUENCY (except for AT6 24):			Quarterly				Quarterly				Quarterly				Quarterly			
INTERVAL:			2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
CHARACTERIZATION FREQUENCY FOR AT6 24:			Semi-annually				Semi-annually				Semi-annually				Semi-annually			
INTERVAL:			6-8 months apart				6-8 months apart				6-8 months apart				6-8 months apart			
FREQUENCY OF SAMPLING:			D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**																
24	Chlorinated Dibenzo-p-dioxins and Dibenzofurans (continued)	Total hexachlorinated dibenzofurans				●●●												
		Total pentachlorinated dibenzo-p-dioxins				●●●												
		Total pentachlorinated dibenzofurans				●●●												
		Total tetrachlorinated dibenzo-p-dioxins				●●●												
		Total tetrachlorinated dibenzofurans				●●●												
25	Solvent Extractables	Oil and grease			●●●				●●●				●●●				●●●	
27	PCBs	PCBs (Total)																

EFFLUENT MONITORING REGULATION – ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE J – DOW CHEMICAL CANADA INC. (SARNIA)

		STREAM CLASSIFICATION AND IMIS CODE:	PR 1600				PR 1700				PR 1900				PR 2000				PR 2100			
		TOXICITY TESTS REQUIRED:	No				No				No				No				Yes			
		CHARACTERIZATION FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		CHARACTERIZATION FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly				Semi-annually				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				6-8 months apart				2-4 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																				
2	Cyanide	Cyanide											●●●									
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●				●●●				●●●				●●●			
4a	Nitrogen	Ammonia plus Ammonium								●●●		●●●										
		Total Kjeldahl nitrogen								●●●		●●●										
4b		Nitrate + Nitrite							●●●			●●●					●●●					
5a	Organic carbon (DOC)	Dissolved organic carbon (DOC)		●●●				●●●				●●●				●●●				●●●		
5b		Total organic carbon (TOC) (NOTE 1)		●●●				●●●				●●●				●●●				●●●		
6	Total phosphorus	Total phosphorus				●●●				●●●		●●●						●●●			●●●	
7	Specific conductance	Specific conductance	●●●				●●●				●●●				●●●				●●●			
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●				●●●				●●●				●●●				●●●		
		Volatile suspended solids (VSS)									●●●											
9	Total metals	Aluminum				●●●				●●●				●●●				●●●				●●●
		Beryllium				●●●				●●●				●●●				●●●				●●●
		Cadmium				●●●				●●●				●●●				●●●				●●●
		Chromium				●●●				●●●		●●●						●●●				
		Cobalt				●●●				●●●				●●●				●●●			●●●	
		Copper				●●●				●●●		●●●				●●●					●●●	

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE J - DOW CHEMICAL CANADA INC. (SARNIA)

		STREAM CLASSIFICATION AND IMIS CODE:	PR 1600				PR 1700				PR 1900				PR 2000				PR 2100			
		TOXICITY TESTS REQUIRED:	No				No				No				No				Yes			
		CHARACTERIZATION FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		CHARACTERIZATION FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly				Semi-annually				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				6-8 months apart				2-4 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																				
9	Total metals (continued)	Lead				●●●				●●●				●●●				●●●				●●●
		Molybdenum				●●●				●●●				●●●				●●●				●●●
		Nickel				●●●				●●●				●●●				●●●				●●●
		Silver				●●●				●●●				●●●				●●●				●●●
		Thallium				●●●				●●●				●●●				●●●				●●●
		Vanadium				●●●				●●●				●●●				●●●				●●●
		Zinc				●●●				●●●				●●●				●●●			●●●	
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)				●●●				●●●		●●●						●●●			●●●	
12	Mercury	Mercury				●●●				●●●		●●●						●●●			●●●	
14	Phenolics (4AAP)	Phenolics (4AAP)*						●●●				●●●				●●●					●●●	
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane				●●●		●●●						●●●								●●●
		1,1,2-Trichloroethane				●●●		●●●						●●●						●●●		
		1,1-Dichloroethane				●●●		●●●						●●●						●●●		
		1,1-Dichloroethylene				●●●		●●●						●●●								●●●
		1,2-Dichlorobenzene				●●●				●●●				●●●								●●●
		1,2-Dichloroethane (Ethylene dichloride)				●●●		●●●						●●●						●●●		
		1,2-Dichloropropane				●●●				●●●			●●●									●●●
		1,3-Dichlorobenzene				●●●				●●●				●●●								●●●
		1,4-Dichlorobenzene				●●●				●●●				●●●								●●●
		Bromoform				●●●				●●●				●●●								●●●
		Bromomethane				●●●				●●●				●●●								●●●
		Carbon tetrachloride				●●●		●●●						●●●						●●●		

EFFLUENT MONITORING REGULATION – ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE J – DOW CHEMICAL CANADA INC. (SARNIA)

		STREAM CLASSIFICATION AND IMIS CODE:	PR 1600				PR 1700				PR 1900				PR 2000				PR 2100			
		TOXICITY TESTS REQUIRED:	No				No				No				No				Yes			
		CHARACTERIZATION FREQUENCY (except for ATG 24):	Quarterly				Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		CHARACTERIZATION FREQUENCY FOR ATG 24:	Quarterly				Quarterly				Quarterly				Semi-annually				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				6-8 months apart				2-4 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																				
16	Volatiles, Halogenated (continued)	Chlorobenzene				●●●				●●●				●●●								●●●
		Chloroform				●●●		●●●						●●●								●●●
		Chloromethane				●●●				●●●				●●●								●●●
		Cis-1,3-Dichloropropylene				●●●				●●●				●●●								●●●
		Dibromochloromethane				●●●				●●●				●●●								●●●
		Ethylene dibromide				●●●				●●●				●●●								●●●
		Methylene chloride				●●●		●●●						●●●								●●●
		Tetrachloroethylene (Perchloroethylene)				●●●		●●●						●●●						●●●		
		Trans-1,2-Dichloroethylene				●●●				●●●				●●●								●●●
		Trans-1,3-Dichloropropylene				●●●				●●●				●●●								●●●
		Trichloroethylene				●●●		●●●						●●●								●●●
		Trichlorofluoromethane				●●●				●●●				●●●								●●●
		Vinyl chloride (Chloroethylene)				●●●				●●●				●●●								●●●
17	Volatiles, Non-Halogenated	Benzene												●●●								
		Styrene												●●●								
		Toluene												●●●								
		o-Xylene												●●●								
		m-Xylene and p-Xylene (NOTE 3)												●●●								
18	Volatiles, Water Soluble	Acrolein																				
		Acrylonitrile																				
19	Extractables, Base Neutral	Acenaphthene																				
		5-nitro Acenaphthene																				
		Acenaphthylene																				

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE J - DOW CHEMICAL CANADA INC. (SARNIA)

		STREAM CLASSIFICATION AND IMIS CODE:	PR 1600				PR 1700				PR 1900				PR 2000				PR 2100			
		TOXICITY TESTS REQUIRED:	No				No				No				No				Yes			
		CHARACTERIZATION FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		CHARACTERIZATION FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly				Semi-annually				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				6-8 months apart				2-4 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																				
19	Extractables, Base Neutral (continued)	Anthracene																				
		Benz(a)anthracene																				
		Benzo(a)pyrene																				
		Benzo(b)fluoranthene																				
		Benzo(g,h,i)perylene																				
		Benzo(k)fluoranthene																				
		Biphenyl																				
		Camphene																				
		1-Chloronaphthalene																				
		2-Chloronaphthalene																				
		Chrysene																				
		Dibenz(a,h)anthracene																				
		Fluoranthene																				
		Fluorene																				
		Indeno(1,2,3-cd)pyrene																				
		Indole																				
		1-Methylnaphthalene																				
		2-Methylnaphthalene																				
		Naphthalene																				
		Perylene																				
		Phenanthrene																				
		Pyrene																				
		Benzyl butyl phthalate																				
		Bis(2-ethylhexyl) phthalate																				
		Di-n-butyl phthalate																				

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE J - DOW CHEMICAL CANADA INC. (SARNIA)

		STREAM CLASSIFICATION AND IMIS CODE:	PR 1600				PR 1700				PR 1900				PR 2000				PR 2100			
		TOXICITY TESTS REQUIRED:	No				No				No				No				Yes			
		CHARACTERIZATION FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		CHARACTERIZATION FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly				Semi-annually				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				6-8 months apart				2-4 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																				
19	Extractables, Base Neutral (continued)	4-Bromophenyl phenyl ether																				
		4-Chlorophenyl phenyl ether																				
		Bis(2-chloroisopropyl)ether																				
		Bis(2-chloroethyl)ether																				
		Diphenyl ether																				
		2,4-Dinitrotoluene																				
		2,6-Dinitrotoluene																				
		Bis(2-chloroethoxy)methane																				
		Diphenylamine (NOTE 4)																				
		N-Nitrosodiphenylamine (NOTE 4)																				
		N-Nitrosodi-n-propylamine																				
20	Extractables, Acid (Phenolics)	2,3,4,5-Tetrachlorophenol								●●●				●●●				●●●				●●●
		2,3,4,6-Tetrachlorophenol								●●●				●●●				●●●				●●●
		2,3,5,6-Tetrachlorophenol								●●●				●●●				●●●				●●●
		2,3,4-Trichlorophenol								●●●				●●●				●●●				●●●
		2,3,5-Trichlorophenol								●●●				●●●				●●●				●●●
		2,4,5-Trichlorophenol								●●●				●●●				●●●				●●●
		2,4,6-Trichlorophenol								●●●				●●●				●●●				●●●
		2,4-Dimethyl phenol								●●●				●●●				●●●				●●●
		2,4-Dinitrophenol								●●●				●●●				●●●				●●●
		2,4-Dichlorophenol								●●●				●●●				●●●				●●●
		2,6-Dichlorophenol								●●●				●●●				●●●				●●●
		4,6-Dinitro-o-cresol								●●●				●●●				●●●				●●●
		2-Chlorophenol								●●●				●●●				●●●				●●●
		4-Chloro-3-methylphenol								●●●				●●●				●●●				●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE J - DOW CHEMICAL CANADA INC. (SARNIA)

			PR 1600				PR 1700				PR 1900				PR 2000				PR 2100			
		STREAM CLASSIFICATION AND IMIS CODE:																				
		TOXICITY TESTS REQUIRED:	No				No				No				No				Yes			
		CHARACTERIZATION FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		CHARACTERIZATION FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly				Semi-annually				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				6-8 months apart				2-4 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																				
20	Extractables, Acid (Phenolics) (continued)	4-Nitrophenol								●●●				●●●				●●●				●●●
		m-Cresol								●●●				●●●				●●●				●●●
		o-Cresol								●●●				●●●				●●●				●●●
		p-Cresol								●●●				●●●				●●●				●●●
		Pentachlorophenol								●●●				●●●				●●●				●●●
		Phenol								●●●				●●●				●●●				●●●
23	Extractables, Neutral -Chlorinated	1,2,3,4-Tetrachlorobenzene				●●●				●●●				●●●								●●●
		1,2,3,5-Tetrachlorobenzene				●●●				●●●				●●●								●●●
		1,2,4,5-Tetrachlorobenzene				●●●				●●●				●●●								●●●
		1,2,3-Trichlorobenzene				●●●				●●●				●●●								●●●
		1,2,4-Trichlorobenzene				●●●				●●●				●●●								●●●
		2,4,5-Trichlorotoluene				●●●				●●●				●●●								●●●
		Hexachlorobenzene				●●●				●●●				●●●								●●●
		Hexachlorobutadiene				●●●				●●●				●●●								●●●
		Hexachlorocyclopentadiene				●●●				●●●				●●●								●●●
		Hexachloroethane				●●●				●●●				●●●								●●●
		Octachlorostyrene				●●●				●●●				●●●								●●●
		Pentachlorobenzene				●●●				●●●				●●●								●●●
24	Chlorinated Dibenzo-p-dioxins and Dibenzofurans	2,3,7,8-Tetrachlorodibenzo-p-dioxin												●●●								
		Octachlorodibenzo-p-dioxin												●●●								
		Octachlorodibenzofuran												●●●								
		Total heptachlorinated dibenzo-p-dioxins												●●●								
		Total heptachlorinated dibenzofurans												●●●								
		Total hexachlorinated dibenzo-p-dioxins												●●●								

EFFLUENT MONITORING REGULATION – ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE J – DOW CHEMICAL CANADA INC. (SARNIA)

		STREAM CLASSIFICATION AND IMIS CODE:	PR 1600				PR 1700				PR 1900				PR 2000				PR 2100			
		TOXICITY TESTS REQUIRED:	No				No				No				No				Yes			
		CHARACTERIZATION FREQUENCY (except for ATG 24):	Quarterly				Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		CHARACTERIZATION FREQUENCY FOR ATG 24:	Quarterly				Quarterly				Quarterly				Semi-annually				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				6-8 months apart				2-4 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																				
24	Chlorinated Dibenzo-p-dioxins and Dibenzofurans (continued)	Total hexachlorinated dibenzofurans												●●●								
		Total pentachlorinated dibenzo-p-dioxins												●●●								
		Total pentachlorinated dibenzofurans												●●●								
		Total tetrachlorinated dibenzo-p-dioxins												●●●								
		Total tetrachlorinated dibenzofurans												●●●								
25	Solvent Extractables	Oil and grease			●●●				●●●				●●●				●●●				●●●	
27	PCBs	PCBs (Total)																				●●●

EFFLUENT MONITORING REGULATION – ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE J – DOW CHEMICAL CANADA INC. (SARNIA)

		STREAM CLASSIFICATION AND IMIS CODE:	CO 0200				CO 0500				CO 0600				CO 0700			
		TOXICITY TESTS REQUIRED:	Yes				Yes				Yes				Yes			
		CHARACTERIZATION FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		CHARACTERIZATION FREQUENCY FOR AT6 24:	Quarterly				Semi-annually				Semi-annually				Semi-annually			
		INTERVAL:	2-4 months apart				6-8 months apart				6-8 months apart				6-8 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																
2	Cyanide	Cyanide																●●●
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●				●●●				●●●			
4a	Nitrogen	Ammonia plus Ammonium																●●●
		Total Kjeldahl nitrogen																●●●
4b		Nitrate + Nitrite								●●●								●●●
5a	Organic carbon (DOC)	Dissolved organic carbon (DOC)	●●●				●●●				●●●				●●●			
5b		Total organic carbon (TOC) (NOTE 1)		●●●				●●●				●●●				●●●		
6	Total phosphorus	Total phosphorus			●●●				●●●				●●●				●●●	
7	Specific conductance	Specific conductance	●●●				●●●				●●●				●●●			
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●				●●●				●●●				●●●		
		Volatile suspended solids (VSS)																
9	Total metals	Aluminum																
		Beryllium																
		Cadmium																
		Chromium																
		Cobalt																
		Copper																

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE J - DOW CHEMICAL CANADA INC. (SARNIA)

		STREAM CLASSIFICATION AND IMIS CODE:	CO 0200				CO 0500				CO 0600				CO 0700			
		TOXICITY TESTS REQUIRED:	Yes				Yes				Yes				Yes			
		CHARACTERIZATION FREQUENCY (except for ATG 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		CHARACTERIZATION FREQUENCY FOR ATG 24:	Quarterly				Semi-annually				Semi-annually				Semi-annually			
		INTERVAL:	2-4 months apart				6-8 months apart				6-8 months apart				6-8 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																
9	Total metals (continued)	Lead																
		Molybdenum																
		Nickel																
		Silver																
		Thallium																
		Vanadium																
		Zinc																
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)																
12	Mercury	Mercury			●●●			●●●					●●●				●●●	
14	Phenolics (4AAP)	Phenolics (4AAP)*				●●●				●●●				●●●			●●●	
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane		●●●						●●●				●●●				●●●
		1,1,2-Trichloroethane		●●●						●●●				●●●				●●●
		1,1-Dichloroethane		●●●						●●●				●●●				●●●
		1,1-Dichloroethylene		●●●						●●●				●●●				●●●
		1,2-Dichlorobenzene				●●●				●●●				●●●				●●●
		1,2-Dichloroethane (Ethylene dichloride)		●●●						●●●				●●●				●●●
		1,2-Dichloropropane				●●●				●●●		●●●						●●●
		1,3-Dichlorobenzene				●●●				●●●				●●●				●●●
		1,4-Dichlorobenzene				●●●				●●●				●●●				●●●
		Bromoform				●●●				●●●				●●●				●●●
		Bromomethane				●●●				●●●				●●●				●●●
		Carbon tetrachloride		●●●				●●●				●●●				●●●		

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE J - DOW CHEMICAL CANADA INC. (SARNIA)

		STREAM CLASSIFICATION AND IMIS CODE:	CO 0200				CO 0500				CO 0600				CO 0700			
		TOXICITY TESTS REQUIRED:	Yes				Yes				Yes				Yes			
		CHARACTERIZATION FREQUENCY (except for ATG 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		CHARACTERIZATION FREQUENCY FOR ATG 24:	Quarterly				Semi-annually				Semi-annually				Semi-annually			
		INTERVAL:	2-4 months apart				6-8 months apart				6-8 months apart				6-8 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																
16	Volatiles, Halogenated (continued)	Chlorobenzene				●●●				●●●				●●●				●●●
		Chloroform				●●●				●●●				●●●				●●●
		Chloromethane				●●●				●●●				●●●				●●●
		Cis-1,3-Dichloropropylene				●●●				●●●				●●●				●●●
		Dibromochloromethane				●●●				●●●				●●●				●●●
		Ethylene dibromide				●●●				●●●				●●●				●●●
		Methylene chloride		●●●						●●●				●●●				●●●
		Tetrachloroethylene (Perchloroethylene)		●●●				●●●						●●●		●●●		
		Trans-1,2-Dichloroethylene				●●●				●●●				●●●				●●●
		Trans-1,3-Dichloropropylene				●●●				●●●				●●●				●●●
		Trichloroethylene		●●●						●●●				●●●				●●●
		Trichlorofluoromethane				●●●				●●●				●●●				●●●
		Vinyl chloride (Chloroethylene)		●●●						●●●				●●●				●●●
17	Volatiles, Non-Halogenated	Benzene										●●●				●●●		
		Styrene												●●●		●●●		
		Toluene												●●●				●●●
		o-Xylene												●●●				●●●
		m-Xylene and p-Xylene (NOTE 3)												●●●				●●●
18	Volatiles, Water Soluble	Acrolein																
		Acrylonitrile																
19	Extractables, Base Neutral	Acenaphthene																
		5-nitro Acenaphthene																
		Acenaphthylene																

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE J - DOW CHEMICAL CANADA INC. (SARNIA)

			CO 0200				CO 0500				CO 0600				CO 0700			
STREAM CLASSIFICATION AND IMIS CODE:																		
TOXICITY TESTS REQUIRED:			Yes				Yes				Yes				Yes			
CHARACTERIZATION FREQUENCY (except for AT6 24):			Quarterly				Quarterly				Quarterly				Quarterly			
INTERVAL:			2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
CHARACTERIZATION FREQUENCY FOR AT6 24:			Quarterly				Semi-annually				Semi-annually				Semi-annually			
INTERVAL:			2-4 months apart				6-8 months apart				6-8 months apart				6-8 months apart			
FREQUENCY OF SAMPLING:			D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**																
19	Extractables, Base Neutral (continued)	Anthracene																
		Benz(a)anthracene																
		Benzo(a)pyrene																
		Benzo(b)fluoranthene																
		Benzo(g,h,i)perylene																
		Benzo(k)fluoranthene																
		Biphenyl																
		Camphene																
		1-Chloronaphthalene																
		2-Chloronaphthalene																
		Chrysene																
		Dibenz(a,h)anthracene																
		Fluoranthene																
		Fluorene																
		Indeno(1,2,3-cd)pyrene																
		Indole																
		1-Methylnaphthalene																
		2-Methylnaphthalene																
		Naphthalene																
		Perylene																
		Phenanthrene																
		Pyrene																
		Benzyl butyl phthalate																
		Bis(2-ethylhexyl) phthalate																
		Di-n-butyl phthalate																

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE J - DOW CHEMICAL CANADA INC. (SARNIA)

STREAM CLASSIFICATION AND IMIS CODE:			CO 0200				CO 0500				CO 0600				CO 0700			
TOXICITY TESTS REQUIRED:			Yes				Yes				Yes				Yes			
CHARACTERIZATION FREQUENCY (except for AT6 24):			Quarterly				Quarterly				Quarterly				Quarterly			
INTERVAL:			2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
CHARACTERIZATION FREQUENCY FOR AT6 24:			Quarterly				Semi-annually				Semi-annually				Semi-annually			
INTERVAL:			2-4 months apart				6-8 months apart				6-8 months apart				6-8 months apart			
FREQUENCY OF SAMPLING:			D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**																
19	Extractables, Base Neutral (continued)	4-Bromophenyl phenyl ether																
		4-Chlorophenyl phenyl ether																
		Bis(2-chloroisopropyl)ether																
		Bis(2-chloroethyl)ether																
		Diphenyl ether																
		2,4-Dinitrotoluene																
		2,6-Dinitrotoluene																
		Bis(2-chloroethoxy)methane																
		Diphenylamine (NOTE 4)																
		N-Nitrosodiphenylamine (NOTE 4)																
		N-Nitrosodi-n-propylamine																
20	Extractables, Acid (Phenolics)	2,3,4,5-Tetrachlorophenol																●●●
		2,3,4,6-Tetrachlorophenol																●●●
		2,3,5,6-Tetrachlorophenol																●●●
		2,3,4-Trichlorophenol																●●●
		2,3,5-Trichlorophenol																●●●
		2,4,5-Trichlorophenol																●●●
		2,4,6-Trichlorophenol																●●●
		2,4-Dimethyl phenol																●●●
		2,4-Dinitrophenol																●●●
		2,4-Dichlorophenol																●●●
		2,6-Dichlorophenol																●●●
		4,6-Dinitro-o-cresol																●●●
		2-Chlorophenol																●●●
		4-Chloro-3-methylphenol																●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE J - DOW CHEMICAL CANADA INC. (SARNIA)

			CO 0200				CO 0500				CO 0600				CO 0700			
		STREAM CLASSIFICATION AND IMIS CODE:																
		TOXICITY TESTS REQUIRED:	Yes				Yes				Yes				Yes			
		CHARACTERIZATION FREQUENCY (except for ATG 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		CHARACTERIZATION FREQUENCY FOR ATG 24:	Quarterly				Semi-annually				Semi-annually				Semi-annually			
		INTERVAL:	2-4 months apart				6-8 months apart				6-8 months apart				6-8 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**																
20	Extractables, Acid (Phenolics) (continued)	4-Nitrophenol																●●●
		m-Cresol																●●●
		o-Cresol																●●●
		p-Cresol																●●●
		Pentachlorophenol																●●●
		Phenol																●●●
23	Extractables, Neutral -Chlorinated	1,2,3,4-Tetrachlorobenzene				●●●				●●●				●●●				●●●
		1,2,3,5-Tetrachlorobenzene				●●●				●●●				●●●				●●●
		1,2,4,5-Tetrachlorobenzene				●●●				●●●				●●●				●●●
		1,2,3-Trichlorobenzene				●●●				●●●				●●●				●●●
		1,2,4-Trichlorobenzene				●●●				●●●				●●●				●●●
		2,4,5-Trichlorotoluene				●●●				●●●				●●●				●●●
		Hexachlorobenzene				●●●				●●●				●●●				●●●
		Hexachlorobutadiene				●●●				●●●				●●●				●●●
		Hexachlorocyclopentadiene				●●●				●●●				●●●				●●●
		Hexachloroethane				●●●				●●●				●●●				●●●
		Octachlorostyrene				●●●				●●●				●●●				●●●
		Pentachlorobenzene				●●●				●●●				●●●				●●●
24	Chlorinated Dibenzo-p-dioxins and Dibenzofurans	2,3,7,8-Tetrachlorodibenzo-p-dioxin																
		Octachlorodibenzo-p-dioxin																
		Octachlorodibenzofuran																
		Total heptachlorinated dibenzo-p-dioxins																
		Total heptachlorinated dibenzofurans																
		Total hexachlorinated dibenzo-p-dioxins																

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE J -- DOW CHEMICAL CANADA INC. (SARNIA)

		STREAM CLASSIFICATION AND IMIS CODE:	CO 0200				CO 0500				CO 0600				CO 0700			
		TOXICITY TESTS REQUIRED:	Yes				Yes				Yes				Yes			
		CHARACTERIZATION FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		CHARACTERIZATION FREQUENCY FOR AT6 24:	Quarterly				Semi-annually				Semi-annually				Semi-annually			
		INTERVAL:	2-4 months apart				6-8 months apart				6-8 months apart				6-8 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																
24	Chlorinated Dibenzo-p-dioxins and Dibenzofurans (continued)	Total hexachlorinated dibenzofurans																
		Total pentachlorinated dibenzo-p-dioxins																
		Total pentachlorinated dibenzofurans																
		Total tetrachlorinated dibenzo-p-dioxins																
		Total tetrachlorinated dibenzofurans																
25	Solvent Extractables	Oil and grease			●●●				●●●				●●●				●●●	
27	PCBs	PCBs (Total)								●●●								

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE J - DOW CHEMICAL CANADA INC. (SARNIA)

STREAM CLASSIFICATION AND IMIS CODE:			CO 0900				OT 0300	OT 1000	WA 2200
TOXICITY TESTS REQUIRED:			Yes				Yes	Yes	No
CHARACTERIZATION FREQUENCY (except for ATG 24):			Quarterly				None	None	None
INTERVAL:			2-4 months apart						
CHARACTERIZATION FREQUENCY FOR ATG 24:			Semi-annually				None	None	None
INTERVAL:			6-8 months apart						
FREQUENCY OF SAMPLING:			D	TW	W	M	M	M	during discharge
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**							
2	Cyanide	Cyanide				●●●			
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●	●●●	●●●
4a	Nitrogen	Ammonia plus Ammonium				●●●			
		Total Kjeldahl nitrogen				●●●			
4b		Nitrate + Nitrite				●●●		●●●	
5a	Organic carbon (DOC)	Dissolved organic carbon (DOC)	●●●				●●●	●●●	●●●
5b		Total organic carbon (TOC) (NOTE 1)		●●●			●●●	●●●	●●●
6	Total phosphorus	Total phosphorus			●●●		●●●	●●●	●●●
7	Specific conductance	Specific conductance	●●●				●●●	●●●	●●●
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●			●●●	●●●	●●●
		Volatile suspended solids (VSS)							●●●
9	Total metals	Aluminum							●●●
		Beryllium							●●●
		Cadmium							●●●
		Chromium							●●●
		Cobalt							●●●
		Copper							●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE J - DOW CHEMICAL CANADA INC. (SARNIA)

STREAM CLASSIFICATION AND IMIS CODE:			CO 0900				OT 0300	OT 1000	WA 2200
TOXICITY TESTS REQUIRED:			Yes				Yes	Yes	No
CHARACTERIZATION FREQUENCY (except for AT6 24):			Quarterly				None	None	None
INTERVAL:			2-4 months apart						
CHARACTERIZATION FREQUENCY FOR AT6 24:			Semi-annually				None	None	None
INTERVAL:			6-8 months apart						
FREQUENCY OF SAMPLING:			D	TW	W	M	M	M	during discharge
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**							
9	Total metals (continued)	Lead							●●●
		Molybdenum							●●●
		Nickel							●●●
		Silver							●●●
		Thallium							●●●
		Vanadium							●●●
		Zinc							●●●
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)							●●●
12	Mercury	Mercury			●●●			●●●	●●●
14	Phenolics (4AAP)	Phenolics (4AAP)*			●●●		●●●	●●●	●●●
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane				●●●	●●●	●●●	
		1,1,2-Trichloroethane				●●●	●●●	●●●	
		1,1-Dichloroethane				●●●	●●●	●●●	
		1,1-Dichloroethylene				●●●	●●●	●●●	
		1,2-Dichlorobenzene				●●●	●●●	●●●	
		1,2-Dichloroethane (Ethylene dichloride)				●●●	●●●	●●●	
		1,2-Dichloropropane				●●●	●●●	●●●	
		1,3-Dichlorobenzene				●●●	●●●	●●●	
		1,4-Dichlorobenzene				●●●	●●●	●●●	
		Bromoform				●●●	●●●	●●●	
		Bromomethane				●●●	●●●	●●●	
		Carbon tetrachloride				●●●	●●●	●●●	

SCHEDULE J - DOW CHEMICAL CANADA INC. (SARNIA)

		STREAM CLASSIFICATION AND IMIS CODE:	CO 0900				OT 0300	OT 1000	WA 2200
		TOXICITY TESTS REQUIRED:	Yes				Yes	Yes	No
		CHARACTERIZATION FREQUENCY (except for AT6 24):	Quarterly				None	None	None
		INTERVAL:	2-4 months apart						
		CHARACTERIZATION FREQUENCY FOR AT6 24:	Semi-annually				None	None	None
		INTERVAL:	6-8 months apart						
		FREQUENCY OF SAMPLING:	D	TW	W	M	M	M	during discharge
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED							
16	Volatiles, Halogenated (continued)	Chlorobenzene				●●●	●●●	●●●	
		Chloroform				●●●	●●●	●●●	
		Chloromethane				●●●	●●●	●●●	
		Cis-1,3-Dichloropropylene				●●●	●●●	●●●	
		Dibromochloromethane				●●●	●●●	●●●	
		Ethylene dibromide				●●●	●●●	●●●	
		Methylene chloride				●●●	●●●	●●●	
		Tetrachloroethylene (Perchloroethylene)		●●●			●●●	●●●	
		Trans-1,2-Dichloroethylene				●●●	●●●	●●●	
		Trans-1,3-Dichloropropylene				●●●	●●●	●●●	
		Trichloroethylene				●●●	●●●	●●●	
		Trichlorofluoromethane				●●●	●●●	●●●	
		Vinyl chloride (Chloroethylene)				●●●	●●●	●●●	
17	Volatiles, Non-Halogenated	Benzene		●●●				●●●	
		Styrene				●●●		●●●	
		Toluene				●●●		●●●	
		o-Xylene				●●●		●●●	
		m-Xylene and p-Xylene (NOTE 3)				●●●		●●●	
18	Volatiles, Water Soluble	Acrolein							
		Acrylonitrile							
19	Extractables, Base Neutral	Acenaphthene							
		5-nitro Acenaphthene							
		Acenaphthylene							

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE J - DOW CHEMICAL CANADA INC. (SARNIA)

STREAM CLASSIFICATION AND IMIS CODE:			CO 0900				OT 0300	OT 1000	WA 2200
TOXICITY TESTS REQUIRED:			Yes				Yes	Yes	No
CHARACTERIZATION FREQUENCY (except for AT6 24):			Quarterly				None	None	None
INTERVAL:			2-4 months apart						
CHARACTERIZATION FREQUENCY FOR AT6 24:			Semi-annually				None	None	None
INTERVAL:			6-8 months apart						
FREQUENCY OF SAMPLING:			D	TW	W	M	M	M	during discharge
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**							
19	Extractables, Base Neutral (continued)	Anthracene							
		Benz(a)anthracene							
		Benzo(a)pyrene							
		Benzo(b)fluoranthene							
		Benzo(g,h,i)perylene							
		Benzo(k)fluoranthene							
		Biphenyl							
		Camphene							
		1-Chloronaphthalene							
		2-Chloronaphthalene							
		Chrysene							
		Dibenz(a,h)anthracene							
		Fluoranthene							
		Fluorene							
		Indeno(1,2,3-cd)pyrene							
		Indole							
		1-Methylnaphthalene							
		2-Methylnaphthalene							
		Naphthalene							
		Perylene							
		Phenanthrene							
		Pyrene							
		Benzyl butyl phthalate							
		Bis(2-ethylhexyl) phthalate							
		Di-n-butyl phthalate							

		STREAM CLASSIFICATION AND IMIS CODE:	CO 0900				OT 0300	OT 1000	WA 2200
		TOXICITY TESTS REQUIRED:	Yes				Yes	Yes	No
		CHARACTERIZATION FREQUENCY (except for AT6 24):	Quarterly				None	None	None
		INTERVAL:	2-4 months apart						
		CHARACTERIZATION FREQUENCY FOR AT6 24:	Semi-annually				None	None	None
		INTERVAL:	6-8 months apart						
		FREQUENCY OF SAMPLING:	D	TW	W	M	M	M	during discharge
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**							
19	Extractables, Base Neutral (continued)	4-Bromophenyl phenyl ether							
		4-Chlorophenyl phenyl ether							
		Bis(2-chloroisopropyl)ether							
		Bis(2-chloroethyl)ether							
		Diphenyl ether							
		2,4-Dinitrotoluene							
		2,6-Dinitrotoluene							
		Bis(2-chloroethoxy)methane							
		Diphenylamine (NOTE 4)							
		N-Nitrosodiphenylamine (NOTE 4)							
		N-Nitrosodi-n-propylamine							
20	Extractables, Acid (Phenolics)	2,3,4,5-Tetrachlorophenol				●●●		●●●	
		2,3,4,6-Tetrachlorophenol				●●●		●●●	
		2,3,5,6-Tetrachlorophenol				●●●		●●●	
		2,3,4-Trichlorophenol				●●●		●●●	
		2,3,5-Trichlorophenol				●●●		●●●	
		2,4,5-Trichlorophenol				●●●		●●●	
		2,4,6-Trichlorophenol				●●●		●●●	
		2,4-Dimethyl phenol				●●●		●●●	
		2,4-Dinitrophenol				●●●		●●●	
		2,4-Dichlorophenol				●●●		●●●	
		2,6-Dichlorophenol				●●●		●●●	
		4,6-Dinitro-o-cresol				●●●		●●●	
		2-Chlorophenol				●●●		●●●	
		4-Chloro-3-methylphenol				●●●		●●●	

SCHEDULE J - DOW CHEMICAL CANADA INC. (SARNIA)

		STREAM CLASSIFICATION AND IMIS CODE:	CO 0900				OT 0300	OT 1000	WA 2200
		TOXICITY TESTS REQUIRED:	Yes				Yes	Yes	No
		CHARACTERIZATION FREQUENCY (except for AT6 24):	Quarterly				None	None	None
		INTERVAL:	2-4 months apart						
		CHARACTERIZATION FREQUENCY FOR AT6 24:	Semi-annually				None	None	None
		INTERVAL:	6-8 months apart						
		FREQUENCY OF SAMPLING:	D	TW	W	M	M	M	during discharge
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**							
20	Extractables, Acid (Phenolics) (continued)	4-Nitrophenol				●●●		●●●	
		m-Cresol				●●●		●●●	
		o-Cresol				●●●		●●●	
		p-Cresol				●●●		●●●	
		Pentachlorophenol				●●●		●●●	
		Phenol				●●●		●●●	
23	Extractables, Neutral -Chlorinated	1,2,3,4-Tetrachlorobenzene				●●●	●●●		
		1,2,3,5-Tetrachlorobenzene				●●●	●●●		
		1,2,4,5-Tetrachlorobenzene				●●●	●●●		
		1,2,3-Trichlorobenzene				●●●	●●●		
		1,2,4-Trichlorobenzene				●●●	●●●		
		2,4,5-Trichlorotoluene				●●●	●●●		
		Hexachlorobenzene				●●●	●●●		
		Hexachlorobutadiene				●●●	●●●		
		Hexachlorocyclopentadiene				●●●	●●●		
		Hexachloroethane				●●●	●●●		
		Octachlorostyrene				●●●	●●●		
		Pentachlorobenzene				●●●	●●●		
24	Chlorinated Dibenzo-p-dioxins and Dibenzofurans	2,3,7,8-Tetrachlorodibenzo-p-dioxin							
		Octachlorodibenzo-p-dioxin							
		Octachlorodibenzofuran							
		Total heptachlorinated dibenzo-p-dioxins							
		Total heptachlorinated dibenzofurans							
		Total hexachlorinated dibenzo-p-dioxins							

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE J - DOW CHEMICAL CANADA INC. (SARNIA)

STREAM CLASSIFICATION AND IMIS CODE:			CO 0900				OT 0300	OT 1000	WA 2200
TOXICITY TESTS REQUIRED:			Yes				Yes	Yes	No
CHARACTERIZATION FREQUENCY (except for AT6 24):			Quarterly				None	None	None
INTERVAL:			2-4 months apart						
CHARACTERIZATION FREQUENCY FOR AT6 24:			Semi-annually				None	None	None
INTERVAL:			6-8 months apart						
FREQUENCY OF SAMPLING:			D	TW	W	M	M	M	during discharge
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**							
24	Chlorinated Dibenzo-p-dioxins and Dibenzofurans (continued)	Total hexachlorinated dibenzofurans							
		Total pentachlorinated dibenzo-p-dioxins							
		Total pentachlorinated dibenzofurans							
		Total tetrachlorinated dibenzo-p-dioxins							
		Total tetrachlorinated dibenzofurans							
25	Solvent Extractables	Oil and grease			●●●		●●●	●●●	●●●
27	PCBs	PCBs (Total)							

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE K - DU PONT CANADA INC. (CORUNNA)

		STREAM CLASSIFICATION AND IMIS CODE:	CO 0200				CO 0400			
		TOXICITY TESTS REQUIRED:	Yes				No			
		CHARACTERIZATION FREQUENCY (except for ATG 24):	Semi-annually				Semi-annually			
		INTERVAL:	6-8 months apart				6-8 months apart			
		CHARACTERIZATION FREQUENCY FOR ATG 24:	Semi-annually				Semi-annually			
		INTERVAL:	6-8 months apart				6-8 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED								
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●			
5a	Organic carbon (DOC)	Dissolved organic carbon (DOC)	●●●					●●●		
5b		Total organic carbon (TOC) (NOTE 1)		●●●				●●●		
6	Total phosphorus	Total phosphorus			●●●					●●●
7	Specific conductance	Specific conductance	●●●				●●●			
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●				●●●		
		Volatile suspended solids (VSS)								
9	Total metals	Aluminum				●●●				●●●
		Beryllium				●●●				●●●
		Cadmium				●●●				●●●
		Chromium				●●●				●●●
		Cobalt				●●●				●●●
		Copper				●●●				●●●
		Lead				●●●				●●●
		Molybdenum				●●●				●●●
		Nickel				●●●				●●●
		Silver				●●●				●●●
		Thallium				●●●				●●●
		Vanadium				●●●				●●●
		Zinc				●●●				●●●

EFFLUENT MONITORING REGULATION – ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE K – DU PONT CANADA INC. (CORUNNA)

		STREAM CLASSIFICATION AND IMIS CODE:	CO 0200				CO 0400			
		TOXICITY TESTS REQUIRED:	Yes				No			
		CHARACTERIZATION FREQUENCY (except for ATG 24):	Semi-annually				Semi-annually			
		INTERVAL:	6-8 months apart				6-8 months apart			
		CHARACTERIZATION FREQUENCY FOR ATG 24:	Semi-annually				Semi-annually			
		INTERVAL:	6-8 months apart				6-8 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED								
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)				●●●				●●●
14	Phenolics (4AAP)	Phenolics (4AAP)*			●●●				●●●	
17	Volatiles, Non-Halogenated	Benzene				●●●				●●●
		Styrene				●●●				●●●
		Toluene				●●●				●●●
		o-Xylene				●●●				●●●
		m-Xylene and p-Xylene (NOTE 3)				●●●				●●●
25	Solvent Extractables	Oil and grease			●●●				●●●	

EFFLUENT MONITORING REGULATION – ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE L – DU PONT CANADA INC. (KINGSTON)

		STREAM CLASSIFICATION AND IMIS CODE:	PR 0600				PR 1000				CO 0700				CO 1100			
		TOXICITY TESTS REQUIRED:	No				No				Yes				Yes			
		CHARACTERIZATION FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		CHARACTERIZATION FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●				●●●				●●●			
4a	Nitrogen	Ammonia plus Ammonium																
		Total Kjeldahl nitrogen		●●●				●●●										
4b		Nitrate + Nitrite																
5a	Organic carbon (DOC)	Dissolved organic carbon (DOC)		●●●				●●●			●●●				●●●			
5b		Total organic carbon (TOC) (NOTE 1)		●●●				●●●				●●●				●●●		
6	Total phosphorus	Total phosphorus			●●●				●●●				●●●				●●●	
7	Specific conductance	Specific conductance	●●●				●●●				●●●				●●●			
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●				●●●				●●●				●●●		
		Volatile suspended solids (VSS)																
9	Total metals	Aluminum			●●●				●●●				●●●			●●●		
		Beryllium				●●●				●●●				●●●				●●●
		Cadmium				●●●				●●●				●●●				●●●
		Chromium				●●●				●●●				●●●				●●●
		Cobalt				●●●				●●●				●●●				●●●
		Copper				●●●				●●●				●●●				●●●
		Lead				●●●				●●●				●●●				●●●
		Molybdenum				●●●				●●●				●●●				●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE L - DU PONT CANADA INC. (KINGSTON)

		STREAM CLASSIFICATION AND IMIS CODE:	PR 0600				PR 1000				CO 0700				CO 1100			
		TOXICITY TESTS REQUIRED:	No				No				Yes				Yes			
		CHARACTERIZATION FREQUENCY (except for ATG 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		CHARACTERIZATION FREQUENCY FOR ATG 24:	Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																
9	Total metals (continued)	Nickel				●●●				●●●				●●●				●●●
		Silver				●●●				●●●				●●●				●●●
		Thallium				●●●				●●●				●●●				●●●
		Vanadium				●●●				●●●				●●●				●●●
		Zinc				●●●				●●●				●●●				●●●
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)				●●●				●●●				●●●				●●●
12	Mercury	Mercury				●●●				●●●								
14	Phenolics (4AAP)	Phenolics (4AAP)*		●●●				●●●				●●●				●●●		
15	Sulphide	Sulphide				●●●				●●●				●●●				●●●
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane				●●●				●●●				●●●				●●●
		1,1,2-Trichloroethane				●●●				●●●				●●●				●●●
		1,1-Dichloroethane				●●●				●●●				●●●				●●●
		1,1-Dichloroethylene				●●●				●●●				●●●				●●●
		1,2-Dichlorobenzene				●●●				●●●				●●●				●●●
		1,2-Dichloroethane (Ethylene dichloride)				●●●				●●●				●●●				●●●
		1,2-Dichloropropane				●●●				●●●				●●●				●●●
		1,3-Dichlorobenzene				●●●				●●●				●●●				●●●
		1,4-Dichlorobenzene				●●●				●●●				●●●				●●●
		Bromoform				●●●				●●●				●●●				●●●
		Bromomethane				●●●				●●●				●●●				●●●
		Carbon tetrachloride				●●●				●●●				●●●				●●●

EFFLUENT MONITORING REGULATION – ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE L – DU PONT CANADA INC. (KINGSTON)

		STREAM CLASSIFICATION AND IMIS CODE:	PR 0600				PR 1000				CO 0700				CO 1100			
		TOXICITY TESTS REQUIRED:	No				No				Yes				Yes			
		CHARACTERIZATION FREQUENCY (except for ATG 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		CHARACTERIZATION FREQUENCY FOR ATG 24:	Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																
16	Volatiles, Halogenated (continued)	Chlorobenzene				●●●				●●●				●●●				●●●
		Chloroform				●●●				●●●				●●●				●●●
		Chloromethane				●●●				●●●				●●●				●●●
		Cis-1,3-Dichloropropylene				●●●				●●●				●●●				●●●
		Dibromochloromethane				●●●				●●●				●●●				●●●
		Ethylene dibromide				●●●				●●●				●●●				●●●
		Methylene chloride				●●●				●●●				●●●				●●●
		Tetrachloroethylene (Perchloroethylene)				●●●				●●●				●●●				●●●
		Trans-1,2-Dichloroethylene				●●●				●●●				●●●				●●●
		Trans-1,3-Dichloropropylene				●●●				●●●				●●●				●●●
		Trichloroethylene				●●●				●●●				●●●				●●●
		Trichlorofluoromethane				●●●				●●●				●●●				●●●
		Vinyl chloride (Chloroethylene)				●●●				●●●				●●●				●●●
17	Volatiles, Non-Halogenated	Benzene				●●●				●●●				●●●				●●●
		Styrene				●●●				●●●				●●●				●●●
		Toluene				●●●				●●●				●●●				●●●
		o-Xylene				●●●				●●●				●●●				●●●
		m-Xylene and p-Xylene (NOTE 3)				●●●				●●●				●●●				●●●
18	Volatiles, Water Soluble	Acrolein				●●●				●●●				●●●				●●●
		Acrylonitrile				●●●				●●●				●●●				●●●
25	Solvent Extractables	Oil and grease			●●●				●●●				●●●				●●●	

EFFLUENT MONITORING REGULATION – ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE L – DU PONT CANADA INC. (KINGSTON)

		STREAM CLASSIFICATION AND IMIS CODE:	WA 0800
		TOXICITY TESTS REQUIRED:	No
		CHARACTERIZATION FREQUENCY (except for AT6 24): INTERVAL:	None
		CHARACTERIZATION FREQUENCY FOR AT6 24: INTERVAL:	None
		FREQUENCY OF SAMPLING:	during discharge
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**	
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●
4a	Nitrogen	Ammonia plus Ammonium	
		Total Kjeldahl nitrogen	
4b		Nitrate + Nitrite	
5a	Organic carbon (DOC)	Dissolved organic carbon (DOC)	●●●
5b		Total organic carbon (TOC) (NOTE 1)	●●●
6	Total phosphorus	Total phosphorus	●●●
7	Specific conductance	Specific conductance	●●●
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)	●●●
		Volatile suspended solids (VSS)	
9	Total metals	Aluminum	●●●
		Beryllium	●●●
		Cadmium	●●●
		Chromium	●●●
		Cobalt	●●●
		Copper	●●●
		Lead	●●●
		Molybdenum	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE L - DU PONT CANADA INC. (KINGSTON)

		STREAM CLASSIFICATION AND IMIS CODE:	WA 0800
		TOXICITY TESTS REQUIRED:	No
		CHARACTERIZATION FREQUENCY (except for ATG 24): INTERVAL:	None
		CHARACTERIZATION FREQUENCY FOR ATG 24: INTERVAL:	None
		FREQUENCY OF SAMPLING:	during discharge
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**	
9	Total metals (continued)	Nickel	●●●
		Silver	●●●
		Thallium	●●●
		Vanadium	●●●
		Zinc	●●●
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)	●●●
12	Mercury	Mercury	
14	Phenolics (4AAP)	Phenolics (4AAP)*	●●●
15	Sulphide	Sulphide	●●●
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane	●●●
		1,1,2-Trichloroethane	●●●
		1,1-Dichloroethane	●●●
		1,1-Dichloroethylene	●●●
		1,2-Dichlorobenzene	●●●
		1,2-Dichloroethane (Ethylene dichloride)	●●●
		1,2-Dichloropropane	●●●
		1,3-Dichlorobenzene	●●●
		1,4-Dichlorobenzene	●●●
		Bromoform	●●●
		Bromomethane	●●●
		Carbon tetrachloride	●●●

EFFLUENT MONITORING REGULATION – ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE L – DU PONT CANADA INC. (KINGSTON)

		STREAM CLASSIFICATION AND IMIS CODE:	WA 0800
		TOXICITY TESTS REQUIRED:	No
		CHARACTERIZATION FREQUENCY (except for AT6 24): INTERVAL:	None
		CHARACTERIZATION FREQUENCY FOR AT6 24: INTERVAL:	None
		FREQUENCY OF SAMPLING:	during discharge
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED	
16	Volatiles, Halogenated (continued)	Chlorobenzene	●●●
		Chloroform	●●●
		Chloromethane	●●●
		Cis-1,3-Dichloropropylene	●●●
		Dibromochloromethane	●●●
		Ethylene dibromide	●●●
		Methylene chloride	●●●
		Tetrachloroethylene (Perchloroethylene)	●●●
		Trans-1,2-Dichloroethylene	●●●
		Trans-1,3-Dichloropropylene	●●●
		Trichloroethylene	●●●
		Trichlorofluoromethane	●●●
		Vinyl chloride (Chloroethylene)	●●●
17	Volatiles, Non-Halogenated	Benzene	●●●
		Styrene	●●●
		Toluene	●●●
		o-Xylene	●●●
		m-Xylene and p-Xylene (NOTE 3)	●●●
18	Volatiles, Water Soluble	Acrolein	●●●
		Acrylonitrile	●●●
25	Solvent Extractables	Oil and grease	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE M - DU PONT CANADA INC. (MAITLAND)

STREAM CLASSIFICATION AND IMIS CODE:			PR 0300				CO 0400				CO 0500				CO 0700			
TOXICITY TESTS REQUIRED:			No				No				No				No			
CHARACTERIZATION FREQUENCY (except for AT6 24):			Quarterly				Quarterly				Quarterly				Quarterly			
INTERVAL:			2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
CHARACTERIZATION FREQUENCY FOR AT6 24:			Semi-annually				Quarterly				Quarterly				Semi-annually			
INTERVAL:			6-8 months apart				2-4 months apart				2-4 months apart				6-8 months apart			
FREQUENCY OF SAMPLING:			D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**																
2	Cyanide	Cyanide			●●●													●●●
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●				●●●				●●●			
4a	Nitrogen	Ammonia plus Ammonium		●●●												●●●		
		Total Kjeldahl nitrogen		●●●								●●●				●●●		
4b		Nitrate + Nitrite		●●●												●●●		
5a	Organic carbon (DOC)	Dissolved organic carbon (DOC)		●●●				●●●				●●●				●●●		
5b		Total organic carbon (TOC) (NOTE 1)		●●●				●●●				●●●				●●●		
6	Total phosphorus	Total phosphorus		●●●						●●●			●●●					●●●
7	Specific conductance	Specific conductance	●●●				●●●				●●●				●●●			
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●				●●●				●●●				●●●		
		Volatile suspended solids (VSS)	●●●															
9	Total metals	Aluminum				●●●								●●●				
		Beryllium				●●●								●●●				
		Cadmium				●●●								●●●				
		Chromium				●●●								●●●				
		Cobalt		●●●										●●●				
		Copper		●●●										●●●				

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE M - DU PONT CANADA INC. (MAITLAND)

STREAM CLASSIFICATION AND IMIS CODE:			PR 0300				CO 0400				CO 0500				CO 0700			
TOXICITY TESTS REQUIRED:			No				No				No				No			
CHARACTERIZATION FREQUENCY (except for ATG 24):			Quarterly				Quarterly				Quarterly				Quarterly			
INTERVAL:			2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
CHARACTERIZATION FREQUENCY FOR ATG 24:			Semi-annually				Quarterly				Quarterly				Semi-annually			
INTERVAL:			6-8 months apart				2-4 months apart				2-4 months apart				6-8 months apart			
FREQUENCY OF SAMPLING:			D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**																
9	Total metals (continued)	Lead				●●●								●●●				
		Molybdenum				●●●								●●●				
		Nickel				●●●								●●●				
		Silver				●●●								●●●				
		Thallium				●●●								●●●				
		Vanadium				●●●								●●●				
		Zinc				●●●								●●●				
10	Hydrides	Antimony				●●●		●●●										
		Arsenic			●●●			●●●										
		Selenium				●●●				●●●								
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)				●●●								●●●				
12	Mercury	Mercury												●●●				
13	Total alkyl lead	Tetra-ethyl lead																
		Tri-ethyl lead																
14	Phenolics (4AAP)	Phenolics (4AAP)*			●●●													
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane				●●●		●●●										
		1,1,2-Trichloroethane				●●●				●●●								
		1,1-Dichloroethane				●●●				●●●								
		1,1-Dichloroethylene				●●●				●●●								
		1,2-Dichlorobenzene				●●●				●●●								

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE M - DU PONT CANADA INC. (MAITLAND)

		STREAM CLASSIFICATION AND IMIS CODE:	PR 0300				CO 0400				CO 0500				CO 0700			
		TOXICITY TESTS REQUIRED:	No				No				No				No			
		CHARACTERIZATION FREQUENCY (except for ATG 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		CHARACTERIZATION FREQUENCY FOR ATG 24:	Semi-annually				Quarterly				Quarterly				Semi-annually			
		INTERVAL:	6-8 months apart				2-4 months apart				2-4 months apart				6-8 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																
16	Volatiles, Halogenated (continued)	1,2-Dichloroethane (Ethylene dichloride)				●●●				●●●								
		1,2-Dichloropropane				●●●				●●●								
		1,3-Dichlorobenzene				●●●				●●●								
		1,4-Dichlorobenzene				●●●				●●●								
		Bromoform				●●●				●●●								
		Bromomethane				●●●				●●●								
		Carbon tetrachloride				●●●		●●●										
		Chlorobenzene				●●●				●●●								
		Chloroform			●●●					●●●								
		Chloromethane				●●●				●●●								
		Cis-1,3-Dichloropropylene				●●●				●●●								
		Dibromochloromethane				●●●		●●●										
		Ethylene dibromide				●●●				●●●								
		Methylene chloride				●●●				●●●								
		Tetrachloroethylene (Perchloroethylene)				●●●		●●●										
		Trans-1,2-Dichloroethylene				●●●				●●●								
		Trans-1,3-Dichloropropylene				●●●				●●●								
		Trichloroethylene				●●●				●●●								
		Trichlorofluoromethane				●●●		●●●										
		Vinyl chloride (Chloroethylene)				●●●				●●●								
17	Volatiles, Non-Halogenated	Benzene				●●●												
		Styrene				●●●												
		Toluene				●●●												
		o-Xylene				●●●												
		m-Xylene and p-Xylene (NOTE 3)				●●●												

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE M - DU PONT CANADA INC. (MAITLAND)

		STREAM CLASSIFICATION AND IMIS CODE:	PR 0300				CO 0400				CO 0500				CO 0700			
		TOXICITY TESTS REQUIRED:	No				No				No				No			
		CHARACTERIZATION FREQUENCY (except for ATG 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		CHARACTERIZATION FREQUENCY FOR ATG 24:	Semi-annually				Quarterly				Quarterly				Semi-annually			
		INTERVAL:	6-8 months apart				2-4 months apart				2-4 months apart				6-8 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																
19	Extractables, Base Neutral	Acenaphthene				●●●												
		5-nitro Acenaphthene				●●●												
		Acenaphthylene				●●●												
		Anthracene				●●●												
		Benz(a)anthracene				●●●												
		Benzo(a)pyrene				●●●												
		Benzo(b)fluoranthene				●●●												
		Benzo(g,h,i)perylene				●●●												
		Benzo(k)fluoranthene				●●●												
		Biphenyl				●●●												
		Camphene				●●●												
		1-Chloronaphthalene				●●●												
		2-Chloronaphthalene				●●●												
		Chrysene				●●●												
		Dibenz(a,h)anthracene				●●●												
		Fluoranthene				●●●												
		Fluorene				●●●												
		Indeno(1,2,3-cd)pyrene				●●●												
		Indole				●●●												
		1-Methylnaphthalene				●●●												
		2-Methylnaphthalene				●●●												
		Naphthalene				●●●												
		Perylene				●●●												
		Phenanthrene				●●●												
		Pyrene				●●●												

		STREAM CLASSIFICATION AND IMIS CODE:	PR 0300				CO 0400				CO 0500				CO 0700			
		TOXICITY TESTS REQUIRED:	No				No				No				No			
		CHARACTERIZATION FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		CHARACTERIZATION FREQUENCY FOR AT6 24:	Semi-annually				Quarterly				Quarterly				Semi-annually			
		INTERVAL:	6-8 months apart				2-4 months apart				2-4 months apart				6-8 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																
19	Extractables, Base Neutral (continued)	Benzyl butyl phthalate																
		Bis(2-ethylhexyl) phthalate																
		Di-n-butyl phthalate																
		4-Bromophenyl phenyl ether																
		4-Chlorophenyl phenyl ether																
		Bis(2-chloroisopropyl)ether																
		Bis(2-chloroethyl)ether																
		Diphenyl ether																
		2,4-Dinitrotoluene																
		2,6-Dinitrotoluene																
		Bis(2-chloroethoxy)methane																
		Diphenylamine (NOTE 4)																
		N-Nitrosodiphenylamine (NOTE 4)																
		N-Nitrosodi-n-propylamine																
20	Extractables, Acid (Phenolics)	2,3,4,5-Tetrachlorophenol				●●●												
		2,3,4,6-Tetrachlorophenol				●●●												
		2,3,5,6-Tetrachlorophenol				●●●												
		2,3,4-Trichlorophenol				●●●												
		2,3,5-Trichlorophenol				●●●												
		2,4,5-Trichlorophenol				●●●												
		2,4,6-Trichlorophenol				●●●												
		2,4-Dimethyl phenol				●●●												
		2,4-Dinitrophenol				●●●												
		2,4-Dichlorophenol				●●●												
		2,6-Dichlorophenol				●●●												

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE M - DU PONT CANADA INC. (MAITLAND)

		STREAM CLASSIFICATION AND IMIS CODE:	PR 0300				CO 0400				CO 0500				CO 0700			
		TOXICITY TESTS REQUIRED:	No				No				No				No			
		CHARACTERIZATION FREQUENCY (except for ATG 24):	Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		CHARACTERIZATION FREQUENCY FOR ATG 24:	Semi-annually				Quarterly				Quarterly				Semi-annually			
		INTERVAL:	6-8 months apart				2-4 months apart				2-4 months apart				6-8 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																
20	Extractables, Acid (Phenolics) (continued)	4,6-Dinitro-o-cresol				●●●												
		2-Chlorophenol				●●●												
		4-Chloro-3-methylphenol				●●●												
		4-Nitrophenol				●●●												
		m-Cresol				●●●												
		o-Cresol				●●●												
		p-Cresol				●●●												
		Pentachlorophenol				●●●												
		Phenol				●●●												
23	Extractables, Neutral -Chlorinated	1,2,3,4-Tetrachlorobenzene				●●●												
		1,2,3,5-Tetrachlorobenzene				●●●												
		1,2,4,5-Tetrachlorobenzene				●●●												
		1,2,3-Trichlorobenzene				●●●												
		1,2,4-Trichlorobenzene				●●●												
		2,4,5-Trichlorotoluene				●●●												
		Hexachlorobenzene				●●●												
		Hexachlorobutadiene				●●●												
		Hexachlorocyclopentadiene				●●●												
		Hexachloroethane				●●●												
		Octachlorostyrene				●●●												
		Pentachlorobenzene				●●●												
25	Solvent Extractables	Oil and grease			●●●				●●●				●●●				●●●	

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE M - DU PONT CANADA INC. (MAITLAND)

		STREAM CLASSIFICATION AND IMIS CODE:	CO 1100				ST 0800	ST 0900	EM 1200
		TOXICITY TESTS REQUIRED:	Yes				No	No	No
		CHARACTERIZATION FREQUENCY (except for ATG 24):	Quarterly				None	None	None
		INTERVAL:	2-4 months apart						
		CHARACTERIZATION FREQUENCY FOR ATG 24:	Quarterly				None	None	None
		INTERVAL:	2-4 months apart						
		FREQUENCY OF SAMPLING:	D	TW	W	M	M	M	during discharge
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED							
2	Cyanide	Cyanide							●●●
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●	●●●	●●●
4a	Nitrogen	Ammonia plus Ammonium				●●●		●●●	●●●
		Total Kjeldahl nitrogen				●●●		●●●	●●●
4b		Nitrate + Nitrite				●●●		●●●	●●●
5a	Organic carbon (DOC)	Dissolved organic carbon (DOC)	●●●				●●●	●●●	●●●
5b		Total organic carbon (TOC) (NOTE 1)		●●●			●●●	●●●	●●●
6	Total phosphorus	Total phosphorus			●●●		●●●	●●●	●●●
7	Specific conductance	Specific conductance	●●●				●●●	●●●	●●●
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●			●●●	●●●	●●●
		Volatile suspended solids (VSS)							
9	Total metals	Aluminum				●●●	●●●	●●●	●●●
		Beryllium				●●●	●●●	●●●	●●●
		Cadmium				●●●	●●●	●●●	●●●
		Chromium				●●●	●●●	●●●	●●●
		Cobalt			●●●		●●●	●●●	●●●
		Copper			●●●		●●●	●●●	●●●

SCHEDULE M - DU PONT CANADA INC. (MAITLAND)

STREAM CLASSIFICATION AND IMIS CODE:			CO 1100				ST 0800	ST 0900	EM 1200	
TOXICITY TESTS REQUIRED:			Yes				No	No	No	
CHARACTERIZATION FREQUENCY (except for AT6 24):			Quarterly				None	None	None	
INTERVAL:			2-4 months apart							
CHARACTERIZATION FREQUENCY FOR AT6 24:			Quarterly				None	None	None	
INTERVAL:			2-4 months apart							
FREQUENCY OF SAMPLING:			D	TW	W	M	M	M	during discharge	
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**								
9	Total metals (continued)	Lead				●●●	●●●	●●●	●●●	
		Molybdenum				●●●	●●●	●●●	●●●	
		Nickel				●●●	●●●	●●●	●●●	
		Silver				●●●	●●●	●●●	●●●	
		Thallium				●●●	●●●	●●●	●●●	
		Vanadium				●●●	●●●	●●●	●●●	
		Zinc				●●●	●●●	●●●	●●●	
10	Hydrides	Antimony				●●●	●●●	●●●	●●●	
		Arsenic				●●●	●●●	●●●	●●●	
		Selenium				●●●	●●●	●●●	●●●	
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)				●●●	●●●	●●●	●●●	
12	Mercury	Mercury				●●●				
13	Total alkyl lead	Tetra-ethyl lead					●●●	●●●		
		Tri-ethyl lead					●●●	●●●		
14	Phenolics (4AAP)	Phenolics (4AAP)*						●●●	●●●	
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane				●●●	●●●		●●●	
		1,1,2-Trichloroethane				●●●	●●●		●●●	
		1,1-Dichloroethane				●●●	●●●		●●●	
		1,1-Dichloroethylene				●●●	●●●		●●●	
		1,2-Dichlorobenzene				●●●	●●●		●●●	

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE M - DU PONT CANADA INC. (MAITLAND)

STREAM CLASSIFICATION AND IMIS CODE:			CO 1100				ST 0800	ST 0900	EM 1200
TOXICITY TESTS REQUIRED:			Yes				No	No	No
CHARACTERIZATION FREQUENCY (except for ATG 24):			Quarterly				None	None	None
INTERVAL:			2-4 months apart						
CHARACTERIZATION FREQUENCY FOR ATG 24:			Quarterly				None	None	None
INTERVAL:			2-4 months apart						
FREQUENCY OF SAMPLING:			D	TW	W	M	M	M	during discharge
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**							
16	Volatiles, Halogenated (continued)	1,2-Dichloroethane (Ethylene dichloride)				●●●	●●●		●●●
		1,2-Dichloropropane				●●●	●●●		●●●
		1,3-Dichlorobenzene				●●●	●●●		●●●
		1,4-Dichlorobenzene				●●●	●●●		●●●
		Bromoform				●●●	●●●		●●●
		Bromomethane				●●●	●●●		●●●
		Carbon tetrachloride				●●●	●●●		●●●
		Chlorobenzene				●●●	●●●		●●●
		Chloroform				●●●	●●●		●●●
		Chloromethane				●●●	●●●		●●●
		Cis-1,3-Dichloropropylene				●●●	●●●		●●●
		Dibromochloromethane				●●●	●●●		●●●
		Ethylene dibromide				●●●	●●●		●●●
		Methylene chloride				●●●	●●●		●●●
		Tetrachloroethylene (Perchloroethylene)				●●●	●●●		●●●
		Trans-1,2-Dichloroethylene				●●●	●●●		●●●
		Trans-1,3-Dichloropropylene				●●●	●●●		●●●
		Trichloroethylene				●●●	●●●		●●●
		Trichlorofluoromethane				●●●	●●●		●●●
		Vinyl chloride (Chloroethylene)				●●●	●●●		●●●
17	Volatiles, Non-Halogenated	Benzene				●●●			●●●
		Styrene				●●●			●●●
		Toluene				●●●			●●●
		o-Xylene				●●●			●●●
		m-Xylene and p-Xylene (NOTE 3)				●●●			●●●

EFFLUENT MONITORING REGULATION – ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE M – DU PONT CANADA INC. (MAITLAND)

STREAM CLASSIFICATION AND IMIS CODE:			CO 1100				ST 0800	ST 0900	EM 1200
TOXICITY TESTS REQUIRED:			Yes				No	No	No
CHARACTERIZATION FREQUENCY (except for ATG 24):			Quarterly				None	None	None
INTERVAL:			2-4 months apart						
CHARACTERIZATION FREQUENCY FOR ATG 24:			Quarterly				None	None	None
INTERVAL:			2-4 months apart						
FREQUENCY OF SAMPLING:			D	TW	W	M	M	M	during discharge
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**							
19	Extractables, Base Neutral	Acenaphthene							●●●
		5-nitro Acenaphthene							●●●
		Acenaphthylene							●●●
		Anthracene							●●●
		Benz(a)anthracene							●●●
		Benzo(a)pyrene							●●●
		Benzo(b)fluoranthene							●●●
		Benzo(g,h,i)perylene							●●●
		Benzo(k)fluoranthene							●●●
		Biphenyl							●●●
		Camphene							●●●
		1-Chloronaphthalene							●●●
		2-Chloronaphthalene							●●●
		Chrysene							●●●
		Dibenz(a,h)anthracene							●●●
		Fluoranthene							●●●
		Fluorene							●●●
		Indeno(1,2,3-cd)pyrene							●●●
		Indole							●●●
		1-Methylnaphthalene							●●●
		2-Methylnaphthalene							●●●
		Naphthalene							●●●
		Perylene							●●●
		Phenanthrene							●●●
		Pyrene							●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE M - DU PONT CANADA INC. (MAITLAND)

STREAM CLASSIFICATION AND IMIS CODE:			CO 1100				ST 0800	ST 0900	EM 1200
TOXICITY TESTS REQUIRED:			Yes				No	No	No
CHARACTERIZATION FREQUENCY (except for AT6 24):			Quarterly				None	None	None
INTERVAL:			2-4 months apart						
CHARACTERIZATION FREQUENCY FOR AT6 24:			Quarterly				None	None	None
INTERVAL:			2-4 months apart						
FREQUENCY OF SAMPLING:			D	TW	W	M	M	M	during discharge
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**							
19	Extractables, Base Neutral (continued)	Benzyl butyl phthalate							●●●
		Bis(2-ethylhexyl) phthalate							●●●
		Di-n-butyl phthalate							●●●
		4-Bromophenyl phenyl ether							
		4-Chlorophenyl phenyl ether							
		Bis(2-chloroisopropyl)ether							
		Bis(2-chloroethyl)ether							
		Diphenyl ether							
		2,4-Dinitrotoluene							
		2,6-Dinitrotoluene							
		Bis(2-chloroethoxy)methane							
		Diphenylamine (NOTE 4)							
		N-Nitrosodiphenylamine (NOTE 4)							
		N-Nitrosodi-n-propylamine							
20	Extractables, Acid (Phenolics)	2,3,4,5-Tetrachlorophenol							
		2,3,4,6-Tetrachlorophenol							
		2,3,5,6-Tetrachlorophenol							
		2,3,4-Trichlorophenol							
		2,3,5-Trichlorophenol							
		2,4,5-Trichlorophenol							
		2,4,6-Trichlorophenol							
		2,4-Dimethyl phenol							
		2,4-Dinitrophenol							
		2,4-Dichlorophenol							
		2,6-Dichlorophenol							

EFFLUENT MONITORING REGULATION – ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE M – DU PONT CANADA INC. (MAITLAND)

		STREAM CLASSIFICATION AND IMIS CODE:	CO 1100				ST 0800	ST 0900	EM 1200
		TOXICITY TESTS REQUIRED:	Yes				No	No	No
		CHARACTERIZATION FREQUENCY (except for AT6 24):	Quarterly				None	None	None
		INTERVAL:	2-4 months apart						
		CHARACTERIZATION FREQUENCY FOR AT6 24:	Quarterly				None	None	None
		INTERVAL:	2-4 months apart						
		FREQUENCY OF SAMPLING:	D	TW	W	M	M	M	during discharge
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED							
20	Extractables, Acid (Phenolics) (continued)	4,6-Dinitro-o-cresol							
		2-Chlorophenol							
		4-Chloro-3-methylphenol							
		4-Nitrophenol							
		m-Cresol							
		o-Cresol							
		p-Cresol							
		Pentachlorophenol							
		Phenol							
23	Extractables, Neutral -Chlorinated	1,2,3,4-Tetrachlorobenzene				●●●			●●●
		1,2,3,5-Tetrachlorobenzene				●●●			●●●
		1,2,4,5-Tetrachlorobenzene				●●●			●●●
		1,2,3-Trichlorobenzene				●●●			●●●
		1,2,4-Trichlorobenzene				●●●			●●●
		2,4,5-Trichlorotoluene				●●●			●●●
		Hexachlorobenzene				●●●			●●●
		Hexachlorobutadiene				●●●			●●●
		Hexachlorocyclopentadiene				●●●			●●●
		Hexachloroethane				●●●			●●●
		Octachlorostyrene				●●●			●●●
		Pentachlorobenzene				●●●			●●●
25	Solvent Extractables	Oil and grease			●●●		●●●	●●●	●●●

EFFLUENT MONITORING REGULATION – ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE N – ESSO CHEMICAL CANADA, A DIVISION OF IMPERIAL OIL LTD. (SARNIA)

		STREAM CLASSIFICATION AND IMIS CODE:	PR 0200				CO 0300			
		TOXICITY TESTS REQUIRED:	No				Yes			
		CHARACTERIZATION FREQUENCY (except for AT6 24):	Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart			
		CHARACTERIZATION FREQUENCY FOR AT6 24:	Semi-annually				Semi-annually			
		INTERVAL:	6-8 months apart				6-8 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED								
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●			
5a	Organic carbon (DOC)	Dissolved organic carbon (DOC)		●●●			●●●			
5b		Total organic carbon (TOC) (NOTE 1)		●●●				●●●		
6	Total phosphorus	Total phosphorus			●●●				●●●	
7	Specific conductance	Specific conductance	●●●				●●●			
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●				●●●		
		Volatile suspended solids (VSS)						●●●		
9	Total metals	Aluminum				●●●				●●●
		Beryllium				●●●				●●●
		Cadmium				●●●				●●●
		Chromium				●●●				●●●
		Cobalt				●●●				●●●
		Copper			●●●				●●●	
		Lead				●●●				●●●
		Molybdenum				●●●				●●●
		Nickel				●●●				●●●
		Silver				●●●				●●●
		Thallium				●●●				●●●
		Vanadium				●●●				●●●
		Zinc			●●●				●●●	

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE N - ESSO CHEMICAL CANADA, A DIVISION OF IMPERIAL OIL LTD. (SARNIA)

		STREAM CLASSIFICATION AND IMIS CODE:	PR 0200				CO 0300			
		TOXICITY TESTS REQUIRED:	No				Yes			
		CHARACTERIZATION FREQUENCY (except for AT6 24):	Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart			
		CHARACTERIZATION FREQUENCY FOR AT6 24:	Semi-annually				Semi-annually			
		INTERVAL:	6-8 months apart				6-8 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED								
10	Hydrides	Antimony				●●●				●●●
		Arsenic				●●●				●●●
		Selenium				●●●				●●●
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)				●●●				●●●
14	Phenolics (4AAP)	Phenolics (4AAP)*			●●●				●●●	
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane				●●●				●●●
		1,1,2-Trichloroethane				●●●				●●●
		1,1-Dichloroethane				●●●				●●●
		1,1-Dichloroethylene				●●●				●●●
		1,2-Dichlorobenzene				●●●				●●●
		1,2-Dichloroethane (Ethylene dichloride)				●●●				●●●
		1,2-Dichloropropane				●●●				●●●
		1,3-Dichlorobenzene				●●●				●●●
		1,4-Dichlorobenzene				●●●				●●●
		Bromoform				●●●				●●●
		Bromomethane				●●●				●●●
		Carbon tetrachloride				●●●				●●●
		Chlorobenzene				●●●				●●●
		Chloroform				●●●				●●●
		Chloromethane				●●●				●●●
		Cis-1,3-Dichloropropylene				●●●				●●●
		Dibromochloromethane				●●●				●●●
		Ethylene dibromide				●●●				●●●

SCHEDULE N - ESSO CHEMICAL CANADA, A DIVISION OF IMPERIAL OIL LTD. (SARNIA)

STREAM CLASSIFICATION AND IMIS CODE:			PR 0200				CO 0300			
TOXICITY TESTS REQUIRED:			No				Yes			
CHARACTERIZATION FREQUENCY (except for ATG 24):			Quarterly				Quarterly			
INTERVAL:			2-4 months apart				2-4 months apart			
CHARACTERIZATION FREQUENCY FOR ATG 24:			Semi-annually				Semi-annually			
INTERVAL:			6-8 months apart				6-8 months apart			
FREQUENCY OF SAMPLING:			D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**								
16	Volatiles, Halogenated (continued)	Methylene chloride				●●●				●●●
		Tetrachloroethylene (Perchloroethylene)				●●●				●●●
		Trans-1,2-Dichloroethylene				●●●				●●●
		Trans-1,3-Dichloropropylene				●●●				●●●
		Trichloroethylene				●●●				●●●
		Trichlorofluoromethane				●●●				●●●
		Vinyl chloride (Chloroethylene)			●●●			●●●		
17	Volatiles, Non-Halogenated	Benzene		●●●				●●●		
		Styrene				●●●				●●●
		Toluene		●●●				●●●		
		o-Xylene		●●●				●●●		
		m-Xylene and p-Xylene (NOTE 3)		●●●				●●●		
19	Extractables, Base Neutral	Acenaphthene				●●●				●●●
		5-nitro Acenaphthene				●●●				●●●
		Acenaphthylene				●●●				●●●
		Anthracene				●●●				●●●
		Benz(a)anthracene				●●●				●●●
		Benzo(a)pyrene				●●●				●●●
		Benzo(b)fluoranthene				●●●				●●●
		Benzo(g,h,i)perylene				●●●				●●●
		Benzo(k)fluoranthene				●●●				●●●
		Biphenyl				●●●				●●●
		Camphene				●●●				●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE N - ESSO CHEMICAL CANADA, A DIVISION OF IMPERIAL OIL LTD. (SARNIA)

STREAM CLASSIFICATION AND IMIS CODE:			PR 0200				CO 0300			
TOXICITY TESTS REQUIRED:			No				Yes			
CHARACTERIZATION FREQUENCY (except for AT6 24):			Quarterly				Quarterly			
INTERVAL:			2-4 months apart				2-4 months apart			
CHARACTERIZATION FREQUENCY FOR AT6 24:			Semi-annually				Semi-annually			
INTERVAL:			6-8 months apart				6-8 months apart			
FREQUENCY OF SAMPLING:			D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED								
19	Extractables, Base Neutral (continued)	1-Chloronaphthalene				●●●				●●●
		2-Chloronaphthalene				●●●				●●●
		Chrysene				●●●				●●●
		Dibenz(a,h)anthracene				●●●				●●●
		Fluoranthene				●●●				●●●
		Fluorene				●●●				●●●
		Indeno(1,2,3-cd)pyrene				●●●				●●●
		Indole				●●●				●●●
		1-Methylnaphthalene				●●●				●●●
		2-Methylnaphthalene				●●●				●●●
		Naphthalene				●●●				●●●
		Perylene				●●●				●●●
		Phenanthrene				●●●				●●●
		Pyrene				●●●				●●●

		STREAM CLASSIFICATION AND IMIS CODE:	PR 0200				CO 0300			
		TOXICITY TESTS REQUIRED:	No				Yes			
		CHARACTERIZATION FREQUENCY (except for ATG 24):	Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart			
		CHARACTERIZATION FREQUENCY FOR ATG 24:	Semi-annually				Semi-annually			
		INTERVAL:	6-8 months apart				6-8 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED								
19	Extractables, Base Neutral (continued)	Benzyl butyl phthalate								
		Bis(2-ethylhexyl) phthalate								
		Di-n-butyl phthalate								
		4-Bromophenyl phenyl ether								
		4-Chlorophenyl phenyl ether								
		Bis(2-chloroisopropyl)ether								
		Bis(2-chloroethyl)ether								
		Diphenyl ether								
		2,4-Dinitrotoluene								
		2,6-Dinitrotoluene								
		Bis(2-chloroethoxy)methane								
		Diphenylamine (NOTE 4)								
		N-Nitrosodiphenylamine (NOTE 4)								
		N-Nitrosodi-n-propylamine								
25	Solvent Extractables	Oil and grease			●●●				●●●	

EFFLUENT MONITORING REGULATION – ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE O – ETHYL CANADA INC. (CORUNNA)

		STREAM CLASSIFICATION AND IMIS CODE:	PR 0200				PR 0300				CO 0100				ST 0400	ST 0500	ST 0600
		TOXICITY TESTS REQUIRED:	No				No				Yes				No	No	No
		CHARACTERIZATION FREQUENCY (except for ATG 24):	Quarterly				Quarterly				Quarterly				None	None	None
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart						
		CHARACTERIZATION FREQUENCY FOR ATG 24:	Quarterly				Quarterly				Quarterly				None	None	None
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart						
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	M	M	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED															
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●				●●●				●●●	●●●	●●●
4a	Nitrogen	Ammonia plus Ammonium															
		Total Kjeldahl nitrogen															
4b		Nitrate + Nitrite		●●●										●●●			
5a	Organic carbon (DOC)	Dissolved organic carbon (DOC)		●●●				●●●			●●●				●●●	●●●	●●●
5b		Total organic carbon (TOC) (NOTE 1)		●●●				●●●				●●●			●●●	●●●	●●●
6	Total phosphorus	Total phosphorus				●●●				●●●			●●●		●●●	●●●	●●●
7	Specific conductance	Specific conductance	●●●				●●●				●●●				●●●	●●●	●●●
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●				●●●				●●●			●●●	●●●	●●●
		Volatile suspended solids (VSS)															
9	Total metals	Aluminum		●●●				●●●						●●●	●●●	●●●	●●●
		Beryllium				●●●				●●●				●●●	●●●	●●●	●●●
		Cadmium				●●●				●●●				●●●	●●●	●●●	●●●
		Chromium				●●●				●●●				●●●	●●●	●●●	●●●
		Cobalt				●●●				●●●				●●●	●●●	●●●	●●●
		Copper				●●●				●●●				●●●	●●●	●●●	●●●
		Lead		●●●			●●●					●●●			●●●	●●●	●●●
		Molybdenum				●●●				●●●				●●●	●●●	●●●	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE O - ETHYL CANADA INC. (CORUNNA)

		STREAM CLASSIFICATION AND IMIS CODE:	PR 0200				PR 0300				CO 0100				ST 0400	ST 0500	ST 0600
		TOXICITY TESTS REQUIRED:	No				No				Yes				No	No	No
		CHARACTERIZATION FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				None	None	None
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart						
		CHARACTERIZATION FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly				None	None	None
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart						
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	M	M	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED															
9	Total metals (continued)	Nickel				●●●				●●●				●●●	●●●	●●●	●●●
		Silver				●●●				●●●				●●●	●●●	●●●	●●●
		Thallium				●●●				●●●				●●●	●●●	●●●	●●●
		Vanadium				●●●				●●●				●●●	●●●	●●●	●●●
		Zinc				●●●				●●●				●●●	●●●	●●●	●●●
10	Hydrides	Antimony				●●●				●●●				●●●	●●●	●●●	●●●
		Arsenic				●●●				●●●				●●●	●●●	●●●	●●●
		Selenium				●●●				●●●				●●●	●●●	●●●	●●●
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)				●●●				●●●				●●●	●●●	●●●	●●●
12	Mercury	Mercury				●●●				●●●				●●●	●●●	●●●	●●●
13	Total alkyl lead	Tetra-ethyl lead		●●●			●●●					●●●			●●●	●●●	●●●
		Tri-ethyl lead		●●●			●●●					●●●			●●●	●●●	●●●
14	Phenolics (4AAP)	Phenolics (4AAP)*						●●●						●●●	●●●	●●●	●●●
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane				●●●				●●●				●●●	●●●	●●●	●●●
		1,1,2-Trichloroethane				●●●				●●●				●●●	●●●	●●●	●●●
		1,1-Dichloroethane		●●●						●●●				●●●	●●●	●●●	●●●
		1,1-Dichloroethylene				●●●				●●●				●●●	●●●	●●●	●●●
		1,2-Dichlorobenzene				●●●				●●●				●●●	●●●	●●●	●●●
		1,2-Dichloroethane (Ethylene dichloride)		●●●				●●●						●●●	●●●	●●●	●●●
		1,2-Dichloropropane				●●●				●●●				●●●	●●●	●●●	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE 0 - ETHYL CANADA INC. (CORUNNA)

STREAM CLASSIFICATION AND IMIS CODE:			PR 0200				PR 0300				CO 0100				ST 0400	ST 0500	ST 0600
TOXICITY TESTS REQUIRED:			No				No				Yes				No	No	No
CHARACTERIZATION FREQUENCY (except for AT6 24):			Quarterly				Quarterly				Quarterly				None	None	None
INTERVAL:			2-4 months apart				2-4 months apart				2-4 months apart						
CHARACTERIZATION FREQUENCY FOR AT6 24:			Quarterly				Quarterly				Quarterly				None	None	None
INTERVAL:			2-4 months apart				2-4 months apart				2-4 months apart						
FREQUENCY OF SAMPLING:			D	TW	W	M	D	TW	W	M	D	TW	W	M	M	M	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED															
16	Volatiles, Halogenated (continued)	1,3-Dichlorobenzene				●●●				●●●				●●●	●●●	●●●	●●●
		1,4-Dichlorobenzene				●●●				●●●				●●●	●●●	●●●	●●●
		Bromoform				●●●				●●●				●●●	●●●	●●●	●●●
		Bromomethane				●●●				●●●				●●●	●●●	●●●	●●●
		Carbon tetrachloride				●●●				●●●				●●●	●●●	●●●	●●●
		Chlorobenzene				●●●				●●●				●●●	●●●	●●●	●●●
		Chloroform				●●●				●●●				●●●	●●●	●●●	●●●
		Chloromethane		●●●				●●●						●●●	●●●	●●●	●●●
		Cis-1,3-Dichloropropylene				●●●				●●●				●●●	●●●	●●●	●●●
		Dibromochloromethane				●●●				●●●				●●●	●●●	●●●	●●●
		Ethylene dibromide		●●●				●●●						●●●	●●●	●●●	●●●
		Methylene chloride		●●●				●●●						●●●	●●●	●●●	●●●
		Tetrachloroethylene (Perchloroethylene)				●●●				●●●				●●●	●●●	●●●	●●●
		Trans-1,2-Dichloroethylene				●●●				●●●				●●●	●●●	●●●	●●●
		Trans-1,3-Dichloropropylene				●●●				●●●				●●●	●●●	●●●	●●●
		Trichloroethylene				●●●				●●●				●●●	●●●	●●●	●●●
		Trichlorofluoromethane				●●●				●●●				●●●	●●●	●●●	●●●
		Vinyl chloride (Chloroethylene)				●●●				●●●				●●●	●●●	●●●	●●●
17	Volatiles, Non-Halogenated	Benzene				●●●				●●●				●●●	●●●	●●●	●●●
		Styrene				●●●				●●●				●●●	●●●	●●●	●●●
		Toluene				●●●				●●●				●●●	●●●	●●●	●●●
		o-Xylene				●●●				●●●				●●●	●●●	●●●	●●●
		m-Xylene and p-Xylene (NOTE 3)				●●●				●●●				●●●	●●●	●●●	●●●

EFFLUENT MONITORING REGULATION – ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE 0 – ETHYL CANADA INC. (CORUNNA)

STREAM CLASSIFICATION AND IMIS CODE:		PR 0200				PR 0300				CO 0100				ST 0400	ST 0500	ST 0600
TOXICITY TESTS REQUIRED:		No				No				Yes				No	No	No
CHARACTERIZATION FREQUENCY (except for AT6 24):		Quarterly				Quarterly				Quarterly				None	None	None
INTERVAL:		2-4 months apart				2-4 months apart				2-4 months apart						
CHARACTERIZATION FREQUENCY FOR AT6 24:		Quarterly				Quarterly				Quarterly				None	None	None
INTERVAL:		2-4 months apart				2-4 months apart				2-4 months apart						
FREQUENCY OF SAMPLING:		D	TW	W	M	D	TW	W	M	D	TW	W	M	M	M	M
ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED															
19	Extractables, Base Neutral															
	Acenaphthene						●●●						●●●	●●●	●●●	●●●
	5-nitro Acenaphthene								●●●				●●●	●●●	●●●	●●●
	Acenaphthylene							●●●					●●●	●●●	●●●	●●●
	Anthracene								●●●				●●●	●●●	●●●	●●●
	Benz(a)anthracene								●●●				●●●	●●●	●●●	●●●
	Benzo(a)pyrene								●●●				●●●	●●●	●●●	●●●
	Benzo(b)fluoranthene								●●●				●●●	●●●	●●●	●●●
	Benzo(g,h,i)perylene								●●●				●●●	●●●	●●●	●●●
	Benzo(k)fluoranthene								●●●				●●●	●●●	●●●	●●●
	Biphenyl								●●●				●●●	●●●	●●●	●●●
	Camphene								●●●				●●●	●●●	●●●	●●●
	1-Chloronaphthalene								●●●				●●●	●●●	●●●	●●●
	2-Chloronaphthalene								●●●				●●●	●●●	●●●	●●●
	Chrysene								●●●				●●●	●●●	●●●	●●●
	Dibenz(a,h)anthracene								●●●				●●●	●●●	●●●	●●●
	Fluoranthene								●●●				●●●	●●●	●●●	●●●
	Fluorene						●●●						●●●	●●●	●●●	●●●
	Indeno(1,2,3-cd)pyrene								●●●				●●●	●●●	●●●	●●●
	Indole								●●●				●●●	●●●	●●●	●●●
	1-Methylnaphthalene								●●●				●●●	●●●	●●●	●●●
	2-Methylnaphthalene								●●●				●●●	●●●	●●●	●●●
	Naphthalene						●●●						●●●	●●●	●●●	●●●
	Perylene								●●●				●●●	●●●	●●●	●●●
	Phenanthrene							●●●					●●●	●●●	●●●	●●●
	Pyrene								●●●				●●●	●●●	●●●	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE O - ETHYL CANADA INC. (CORUNNA)

		STREAM CLASSIFICATION AND IMIS CODE:	PR 0200				PR 0300				CO 0100				ST 0400	ST 0500	ST 0600
		TOXICITY TESTS REQUIRED:	No				No				Yes				No	No	No
		CHARACTERIZATION FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				None	None	None
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart						
		CHARACTERIZATION FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly				None	None	None
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart						
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	M	M	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED															
19	Extractables, Base Neutral (continued)	Benzyl butyl phthalate								●●●				●●●			
		Bis(2-ethylhexyl) phthalate								●●●				●●●			
		Di-n-butyl phthalate								●●●				●●●			
		4-Bromophenyl phenyl ether								●●●				●●●			
		4-Chlorophenyl phenyl ether								●●●				●●●			
		Bis(2-chloroisopropyl)ether								●●●				●●●			
		Bis(2-chloroethyl)ether								●●●				●●●			
		Diphenyl ether								●●●				●●●			
		2,4-Dinitrotoluene								●●●				●●●			
		2,6-Dinitrotoluene								●●●				●●●			
		Bis(2-chloroethoxy)methane								●●●				●●●			
		Diphenylamine (NOTE 4)								●●●				●●●			
		N-Nitrosodiphenylamine (NOTE 4)								●●●				●●●			
		N-Nitrosodi-n-propylamine								●●●				●●●			
25	Solvent Extractables	Oil and grease			●●●				●●●				●●●		●●●	●●●	●●●

EFFLUENT MONITORING REGULATION – ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE P – NOVACOR CHEMICALS LTD. (MOORETOWN)

STREAM CLASSIFICATION AND IMIS CODE:			CO 0100				ST 0200
TOXICITY TESTS REQUIRED:			Yes				No
CHARACTERIZATION FREQUENCY (except for AT6 24):			Semi-annually				None
INTERVAL:			6-8 months apart				
CHARACTERIZATION FREQUENCY FOR AT6 24:			Semi-annually				None
INTERVAL:			6-8 months apart				
FREQUENCY OF SAMPLING:			D	TW	W	M	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**					
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●
5a	Organic carbon (DOC)	Dissolved organic carbon (DOC)	●●●				●●●
5b		Total organic carbon (TOC) (NOTE 1)		●●●			●●●
6	Total phosphorus	Total phosphorus			●●●		●●●
7	Specific conductance	Specific conductance	●●●				●●●
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●			●●●
		Volatile suspended solids (VSS)					
9	Total metals	Aluminum				●●●	●●●
		Beryllium				●●●	●●●
		Cadmium				●●●	●●●
		Chromium			●●●		●●●
		Cobalt				●●●	●●●
		Copper				●●●	●●●
		Lead				●●●	●●●
		Molybdenum				●●●	●●●
		Nickel				●●●	●●●
		Silver				●●●	●●●
		Thallium				●●●	●●●
		Vanadium				●●●	●●●
		Zinc			●●●		●●●

EFFLUENT MONITORING REGULATION – ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE P – NOVACOR CHEMICALS LTD. (MOORETOWN)

STREAM CLASSIFICATION AND IMIS CODE:			CO 0100				ST 0200
TOXICITY TESTS REQUIRED:			Yes				No
CHARACTERIZATION FREQUENCY (except for AT6 24):			Semi-annually				None
INTERVAL:			6-8 months apart				
CHARACTERIZATION FREQUENCY FOR AT6 24:			Semi-annually				None
INTERVAL:			6-8 months apart				
FREQUENCY OF SAMPLING:			D	TW	W	M	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**					
10	Hydrides	Antimony				●●●	●●●
		Arsenic			●●●		●●●
		Selenium				●●●	●●●
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)			●●●		●●●
14	Phenolics (4AAP)	Phenolics (4AAP)*				●●●	●●●
25	Solvent Extractables	Oil and grease			●●●		●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE Q - POLYSAR LIMITED (SARNIA)

		STREAM CLASSIFICATION AND IMIS CODE:	PR 0300				PR 0800				PR 0900				PR 1000				PR 1800			
		TOXICITY TESTS REQUIRED:	No				Yes				No				No				Yes			
		CHARACTERIZATION FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		CHARACTERIZATION FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED																				
2	Cyanide	Cyanide								●●●							●●●				●●●	
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●				●●●				●●●				●●●			
4a	Nitrogen	Ammonia plus Ammonium																●●●		●●●		
		Total Kjeldahl nitrogen																●●●		●●●		
4b		Nitrate + Nitrite																●●●		●●●		
5a	Organic carbon (DOC)	Dissolved organic carbon (DOC)		●●●			●●●					●●●				●●●			●●●			
5b		Total organic carbon (TOC) (NOTE 1)		●●●				●●●				●●●				●●●				●●●		
6	Total phosphorus	Total phosphorus			●●●				●●●				●●●				●●●			●●●		
7	Specific conductance	Specific conductance	●●●				●●●				●●●				●●●				●●●			
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●				●●●				●●●				●●●				●●●		
		Volatile suspended solids (VSS)																	●●●			
9	Total metals	Aluminum		●●●						●●●		●●●				●●●				●●●		
		Beryllium				●●●				●●●				●●●				●●●			●●●	
		Cadmium				●●●				●●●				●●●				●●●			●●●	
		Chromium				●●●				●●●				●●●				●●●			●●●	
		Cobalt				●●●				●●●				●●●				●●●			●●●	
		Copper				●●●				●●●				●●●				●●●			●●●	

EFFLUENT MONITORING REGULATION – ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE Q – POLYSAR LIMITED (SARNIA)

		STREAM CLASSIFICATION AND IMIS CODE:	PR 0300				PR 0800				PR 0900				PR 1000				PR 1800			
		TOXICITY TESTS REQUIRED:	No				Yes				No				No				Yes			
		CHARACTERIZATION FREQUENCY (except for ATG 24):	Quarterly				Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		CHARACTERIZATION FREQUENCY FOR ATG 24:	Quarterly				Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																				
9	Total metals (continued)	Lead				●●●				●●●				●●●				●●●			●●●	
		Molybdenum				●●●				●●●				●●●				●●●			●●●	
		Nickel				●●●				●●●				●●●				●●●			●●●	
		Silver				●●●				●●●				●●●				●●●			●●●	
		Thallium				●●●				●●●				●●●				●●●			●●●	
		Vanadium				●●●				●●●				●●●				●●●			●●●	
		Zinc				●●●				●●●		●●●						●●●		●●●		
10	Hydrides	Antimony												●●●				●●●			●●●	
		Arsenic												●●●				●●●			●●●	
		Selenium												●●●				●●●			●●●	
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)				●●●				●●●				●●●				●●●			●●●	
12	Mercury	Mercury																			●●●	
14	Phenolics (4AAP)	Phenolics (4AAP)*		●●●				●●●					●●●			●●●				●●●		
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane				●●●				●●●				●●●				●●●			●●●	
		1,1,2-Trichloroethane				●●●				●●●				●●●				●●●			●●●	
		1,1-Dichloroethane				●●●				●●●				●●●				●●●			●●●	
		1,1-Dichloroethylene				●●●				●●●				●●●				●●●			●●●	
		1,2-Dichlorobenzene				●●●				●●●				●●●				●●●			●●●	
		1,2-Dichloroethane (Ethylene dichloride)			●●●				●●●					●●●				●●●			●●●	
		1,2-Dichloropropane				●●●				●●●				●●●				●●●			●●●	
		1,3-Dichlorobenzene				●●●				●●●				●●●				●●●			●●●	

EFFLUENT MONITORING REGULATION – ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE Q – POLYSAR LIMITED (SARNIA)

		STREAM CLASSIFICATION AND IMIS CODE:	PR 0300				PR 0800				PR 0900				PR 1000				PR 1800			
		TOXICITY TESTS REQUIRED:	No				Yes				No				No				Yes			
		CHARACTERIZATION FREQUENCY (except for ATG 24):	Quarterly				Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		CHARACTERIZATION FREQUENCY FOR ATG 24:	Quarterly				Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																				
16	Volatiles, Halogenated (continued)	1,4-Dichlorobenzene				●●●				●●●				●●●				●●●			●●●	
		Bromoform				●●●				●●●				●●●				●●●		●●●		
		Bromomethane				●●●				●●●		●●●						●●●			●●●	
		Carbon tetrachloride				●●●				●●●				●●●				●●●			●●●	
		Chlorobenzene				●●●				●●●				●●●				●●●			●●●	
		Chloroform				●●●				●●●				●●●				●●●			●●●	
		Chloromethane			●●●					●●●		●●●					●●●			●●●		
		Cis-1,3-Dichloropropylene				●●●				●●●				●●●				●●●			●●●	
		Dibromochloromethane				●●●				●●●				●●●				●●●			●●●	
		Ethylene dibromide				●●●				●●●				●●●				●●●			●●●	
		Methylene chloride				●●●				●●●				●●●				●●●		●●●		
		Tetrachloroethylene (Perchloroethylene)				●●●				●●●				●●●				●●●			●●●	
		Trans-1,2-Dichloroethylene				●●●				●●●				●●●				●●●			●●●	
		Trans-1,3-Dichloropropylene				●●●				●●●				●●●				●●●			●●●	
		Trichloroethylene				●●●				●●●				●●●				●●●			●●●	
		Trichlorofluoromethane				●●●				●●●				●●●				●●●			●●●	
		Vinyl chloride (Chloroethylene)				●●●				●●●				●●●				●●●			●●●	
17	Volatiles, Non-Halogenated	Benzene		●●●				●●●				●●●					●●●			●●●		
		Styrene				●●●				●●●				●●●				●●●			●●●	
		Toluene				●●●				●●●				●●●				●●●			●●●	
		o-Xylene				●●●				●●●		●●●						●●●			●●●	
		m-Xylene and p-Xylene (NOTE 3)				●●●				●●●		●●●						●●●			●●●	
18	Volatiles, Water Soluble	Acrolein				●●●				●●●				●●●							●●●	
		Acrylonitrile				●●●				●●●				●●●							●●●	

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE Q - POLYSAR LIMITED (SARNIA)

		STREAM CLASSIFICATION AND IMIS CODE:	PR 0300				PR 0800				PR 0900				PR 1000				PR 1800			
		TOXICITY TESTS REQUIRED:	No				Yes				No				No				Yes			
		CHARACTERIZATION FREQUENCY (except for ATG 24):	Quarterly				Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		CHARACTERIZATION FREQUENCY FOR ATG 24:	Quarterly				Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																				
19	Extractables, Base Neutral	Acenaphthene								●●●											●●●	
		5-nitro Acenaphthene								●●●											●●●	
		Acenaphthylene								●●●											●●●	
		Anthracene								●●●											●●●	
		Benz(a)anthracene								●●●											●●●	
		Benzo(a)pyrene								●●●											●●●	
		Benzo(b)fluoranthene								●●●											●●●	
		Benzo(g,h,i)perylene								●●●											●●●	
		Benzo(k)fluoranthene								●●●											●●●	
		Biphenyl								●●●											●●●	
		Camphene								●●●											●●●	
		1-Chloronaphthalene								●●●											●●●	
		2-Chloronaphthalene								●●●											●●●	
		Chrysene								●●●											●●●	
		Dibenz(a,h)anthracene								●●●											●●●	
		Fluoranthene								●●●											●●●	
		Fluorene								●●●											●●●	
		Indeno(1,2,3-cd)pyrene								●●●											●●●	
		Indole								●●●											●●●	
		1-Methylnaphthalene								●●●											●●●	
		2-Methylnaphthalene								●●●											●●●	
		Naphthalene								●●●											●●●	
		Perylene								●●●											●●●	
		Phenanthrene								●●●											●●●	
		Pyrene								●●●											●●●	

EFFLUENT MONITORING REGULATION – ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE Q – POLYSAR LIMITED (SARNIA)

		STREAM CLASSIFICATION AND IMIS CODE:	PR 0300				PR 0800				PR 0900				PR 1000				PR 1800			
		TOXICITY TESTS REQUIRED:	No				Yes				No				No				Yes			
		CHARACTERIZATION FREQUENCY (except for ATG 24):	Quarterly				Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		CHARACTERIZATION FREQUENCY FOR ATG 24:	Quarterly				Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																				
19	Extractables, Base Neutral (continued)	Benzyl butyl phthalate																			●●●	
		Bis(2-ethylhexyl) phthalate																			●●●	
		Di-n-butyl phthalate																			●●●	
		4-Bromophenyl phenyl ether																			●●●	
		4-Chlorophenyl phenyl ether																			●●●	
		Bis(2-chloroisopropyl)ether																			●●●	
		Bis(2-chloroethyl)ether																			●●●	
		Diphenyl ether																			●●●	
		2,4-Dinitrotoluene																			●●●	
		2,6-Dinitrotoluene																			●●●	
		Bis(2-chloroethoxy)methane																			●●●	
		Diphenylamine (NOTE 4)																			●●●	
		N-Nitrosodiphenylamine (NOTE 4)																			●●●	
		N-Nitrosodi-n-propylamine																			●●●	
20	Extractables, Acid (Phenolics)	2,3,4,5-Tetrachlorophenol				●●●				●●●				●●●				●●●			●●●	
		2,3,4,6-Tetrachlorophenol				●●●				●●●				●●●				●●●			●●●	
		2,3,5,6-Tetrachlorophenol				●●●				●●●				●●●				●●●			●●●	
		2,3,4-Trichlorophenol				●●●				●●●				●●●				●●●			●●●	
		2,3,5-Trichlorophenol				●●●				●●●				●●●				●●●			●●●	
		2,4,5-Trichlorophenol				●●●				●●●				●●●				●●●			●●●	
		2,4,6-Trichlorophenol				●●●				●●●				●●●				●●●			●●●	
		2,4-Dimethyl phenol				●●●				●●●				●●●				●●●			●●●	
		2,4-Dinitrophenol				●●●				●●●				●●●				●●●			●●●	
		2,4-Dichlorophenol				●●●				●●●				●●●				●●●			●●●	
		2,6-Dichlorophenol				●●●				●●●				●●●				●●●			●●●	

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE Q - POLYSAR LIMITED (SARNIA)

		STREAM CLASSIFICATION AND IMIS CODE:	PR 0300				PR 0800				PR 0900				PR 1000				PR 1800			
		TOXICITY TESTS REQUIRED:	No				Yes				No				No				Yes			
		CHARACTERIZATION FREQUENCY (except for ATG 24):	Quarterly				Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		CHARACTERIZATION FREQUENCY FOR ATG 24:	Quarterly				Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																				
20	Extractables, Acid (Phenolics) (continued)	4,6-Dinitro-o-cresol				●●●				●●●				●●●				●●●			●●●	
		2-Chlorophenol				●●●				●●●				●●●				●●●			●●●	
		4-Chloro-3-methylphenol				●●●				●●●				●●●				●●●			●●●	
		4-Nitrophenol				●●●				●●●				●●●				●●●			●●●	
		m-Cresol				●●●				●●●				●●●				●●●			●●●	
		o-Cresol				●●●				●●●				●●●				●●●			●●●	
		p-Cresol				●●●				●●●				●●●				●●●			●●●	
		Pentachlorophenol				●●●				●●●				●●●				●●●			●●●	
		Phenol				●●●				●●●				●●●				●●●			●●●	
23	Extractables, Neutral -Chlorinated	1,2,3,4-Tetrachlorobenzene				●●●				●●●				●●●				●●●			●●●	
		1,2,3,5-Tetrachlorobenzene				●●●				●●●				●●●				●●●			●●●	
		1,2,4,5-Tetrachlorobenzene				●●●				●●●				●●●				●●●			●●●	
		1,2,3-Trichlorobenzene				●●●				●●●				●●●				●●●			●●●	
		1,2,4-Trichlorobenzene				●●●				●●●				●●●				●●●			●●●	
		2,4,5-Trichlorotoluene				●●●				●●●				●●●				●●●			●●●	
		Hexachlorobenzene				●●●				●●●				●●●				●●●			●●●	
		Hexachlorobutadiene				●●●				●●●				●●●				●●●			●●●	
		Hexachlorocyclopentadiene				●●●				●●●				●●●				●●●			●●●	
		Hexachloroethane				●●●				●●●				●●●				●●●			●●●	
		Octachlorostyrene				●●●				●●●				●●●				●●●			●●●	
		Pentachlorobenzene				●●●				●●●				●●●				●●●			●●●	
25	Solvent Extractables	Oil and grease			●●●				●●●				●●●				●●●				●●●	
27	PCBs	PCBs (Total)																			●●●	

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE Q - POLYSAR LIMITED (SARNIA)

		STREAM CLASSIFICATION AND IMIS CODE:	PR 1900				CO 0200				CO 0400				CO 0500				CO 1100			
		TOXICITY TESTS REQUIRED:	No				Yes				Yes				Yes				Yes			
		CHARACTERIZATION FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		CHARACTERIZATION FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																				
2	Cyanide	Cyanide			●●●																	●●●
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●				●●●				●●●				●●●			
4a	Nitrogen	Ammonia plus Ammonium				●●●																
		Total Kjeldahl nitrogen				●●●																
4b		Nitrate + Nitrite				●●●																
5a	Organic carbon (DOC)	Dissolved organic carbon (DOC)		●●●			●●●				●●●				●●●				●●●			
5b		Total organic carbon (TOC) (NOTE 1)		●●●				●●●				●●●				●●●				●●●		
6	Total phosphorus	Total phosphorus			●●●				●●●				●●●				●●●				●●●	
7	Specific conductance	Specific conductance	●●●				●●●				●●●				●●●				●●●			
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●				●●●				●●●				●●●				●●●		
		Volatile suspended solids (VSS)																				
9	Total metals	Aluminum		●●●						●●●				●●●								●●●
		Beryllium				●●●				●●●				●●●								●●●
		Cadmium				●●●				●●●				●●●								●●●
		Chromium				●●●				●●●				●●●								●●●
		Cobalt				●●●				●●●				●●●								●●●
		Copper				●●●				●●●				●●●								●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE Q - POLYSAR LIMITED (SARNIA)

		STREAM CLASSIFICATION AND IMIS CODE:	PR 1900				CO 0200				CO 0400				CO 0500				CO 1100			
		TOXICITY TESTS REQUIRED:	No				Yes				Yes				Yes				Yes			
		CHARACTERIZATION FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		CHARACTERIZATION FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																				
9	Total metals (continued)	Lead				●●●				●●●				●●●								●●●
		Molybdenum				●●●				●●●				●●●								●●●
		Nickel				●●●				●●●				●●●								●●●
		Silver				●●●				●●●				●●●								●●●
		Thallium				●●●				●●●				●●●								●●●
		Vanadium				●●●				●●●				●●●								●●●
		Zinc				●●●				●●●				●●●								●●●
10	Hydrides	Antimony				●●●																●●●
		Arsenic				●●●																●●●
		Selenium				●●●																●●●
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)				●●●				●●●				●●●								●●●
12	Mercury	Mercury												●●●								
14	Phenolics (4AAP)	Phenolics (4AAP)*		●●●						●●●				●●●				●●●				●●●
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane				●●●				●●●				●●●				●●●				●●●
		1,1,2-Trichloroethane				●●●				●●●				●●●				●●●				●●●
		1,1-Dichloroethane				●●●				●●●				●●●				●●●				●●●
		1,1-Dichloroethylene				●●●				●●●				●●●				●●●				●●●
		1,2-Dichlorobenzene				●●●				●●●				●●●				●●●				●●●
		1,2-Dichloroethane (Ethylene dichloride)				●●●				●●●				●●●				●●●				●●●
		1,2-Dichloropropane				●●●				●●●				●●●				●●●				●●●
		1,3-Dichlorobenzene				●●●				●●●				●●●				●●●				●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE Q - POLYSAR LIMITED (SARNIA)

		STREAM CLASSIFICATION AND IMIS CODE:	PR 1900				CO 0200				CO 0400				CO 0500				CO 1100			
		TOXICITY TESTS REQUIRED:	No				Yes				Yes				Yes				Yes			
		CHARACTERIZATION FREQUENCY (except for ATG 24):	Quarterly				Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		CHARACTERIZATION FREQUENCY FOR ATG 24:	Quarterly				Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																				
16	Volatiles, Halogenated (continued)	1,4-Dichlorobenzene				●●●				●●●				●●●				●●●				●●●
		Bromoform				●●●				●●●				●●●				●●●				●●●
		Bromomethane				●●●				●●●				●●●				●●●				●●●
		Carbon tetrachloride				●●●				●●●				●●●				●●●				●●●
		Chlorobenzene				●●●				●●●				●●●				●●●				●●●
		Chloroform				●●●				●●●				●●●				●●●				●●●
		Chloromethane			●●●					●●●				●●●				●●●				●●●
		Cis-1,3-Dichloropropylene				●●●				●●●				●●●				●●●				●●●
		Dibromochloromethane				●●●				●●●				●●●				●●●				●●●
		Ethylene dibromide				●●●				●●●				●●●				●●●				●●●
		Methylene chloride				●●●				●●●				●●●				●●●				●●●
		Tetrachloroethylene (Perchloroethylene)				●●●				●●●				●●●				●●●				●●●
		Trans-1,2-Dichloroethylene				●●●				●●●				●●●				●●●				●●●
		Trans-1,3-Dichloropropylene				●●●				●●●				●●●				●●●				●●●
		Trichloroethylene				●●●				●●●				●●●				●●●				●●●
		Trichlorofluoromethane				●●●				●●●				●●●				●●●				●●●
		Vinyl chloride (Chloroethylene)				●●●				●●●				●●●				●●●				●●●
17	Volatiles, Non-Halogenated	Benzene			●●●				●●●					●●●			●●●				●●●	
		Styrene				●●●				●●●				●●●				●●●				●●●
		Toluene				●●●				●●●				●●●				●●●				●●●
		o-Xylene				●●●				●●●				●●●				●●●				●●●
		m-Xylene and p-Xylene (NOTE 3)				●●●				●●●				●●●				●●●				●●●
18	Volatiles, Water Soluble	Acrolein								●●●								●●●				●●●
		Acrylonitrile								●●●								●●●				●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE Q - POLYSAR LIMITED (SARNIA)

STREAM CLASSIFICATION AND IMIS CODE:		PR 1900				CO 0200				CO 0400				CO 0500				CO 1100			
TOXICITY TESTS REQUIRED:		No				Yes				Yes				Yes				Yes			
CHARACTERIZATION FREQUENCY (except for ATG 24):		Quarterly				Quarterly				Quarterly				Quarterly				Quarterly			
INTERVAL:		2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
CHARACTERIZATION FREQUENCY FOR ATG 24:		Quarterly				Quarterly				Quarterly				Quarterly				Quarterly			
INTERVAL:		2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
FREQUENCY OF SAMPLING:		D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
ANALYTICAL TEST GROUP	**PARAMETERS TO BE ANALYZED**																				
19	Extractables, Base Neutral	Acenaphthene															●●●				
		5-nitro Acenaphthene															●●●				
		Acenaphthylene															●●●				
		Anthracene															●●●				
		Benz(a)anthracene															●●●				
		Benzo(a)pyrene															●●●				
		Benzo(b)fluoranthene															●●●				
		Benzo(g,h,i)perylene															●●●				
		Benzo(k)fluoranthene															●●●				
		Biphenyl															●●●				
		Camphene															●●●				
		1-Chloronaphthalene															●●●				
		2-Chloronaphthalene															●●●				
		Chrysene															●●●				
		Dibenz(a,h)anthracene															●●●				
		Fluoranthene															●●●				
		Fluorene															●●●				
		Indeno(1,2,3-cd)pyrene															●●●				
		Indole															●●●				
		1-Methylnaphthalene															●●●				
		2-Methylnaphthalene															●●●				
		Naphthalene															●●●				
		Perylene															●●●				
		Phenanthrene															●●●				
		Pyrene															●●●				

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE Q - POLYSAR LIMITED (SARNIA)

		STREAM CLASSIFICATION AND IMIS CODE:	PR 1900				CO 0200				CO 0400				CO 0500				CO 1100			
		TOXICITY TESTS REQUIRED:	No				Yes				Yes				Yes				Yes			
		CHARACTERIZATION FREQUENCY (except for ATG 24):	Quarterly				Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		CHARACTERIZATION FREQUENCY FOR ATG 24:	Quarterly				Quarterly				Quarterly				Quarterly				Quarterly			
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart				2-4 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																				
19	Extractables, Base Neutral (continued)	Benzyl butyl phthalate																				
		Bis(2-ethylhexyl) phthalate																				
		Di-n-butyl phthalate																				
		4-Bromophenyl phenyl ether																				
		4-Chlorophenyl phenyl ether																				
		Bis(2-chloroisopropyl)ether																				
		Bis(2-chloroethyl)ether																				
		Diphenyl ether																				
		2,4-Dinitrotoluene																				
		2,6-Dinitrotoluene																				
		Bis(2-chloroethoxy)methane																				
		Diphenylamine (NOTE 4)																				
		N-Nitrosodiphenylamine (NOTE 4)																				
		N-Nitrosodi-n-propylamine																				
20	Extractables, Acid (Phenolics)	2,3,4,5-Tetrachlorophenol				●●●								●●●								●●●
		2,3,4,6-Tetrachlorophenol				●●●								●●●								●●●
		2,3,5,6-Tetrachlorophenol				●●●								●●●								●●●
		2,3,4-Trichlorophenol				●●●								●●●								●●●
		2,3,5-Trichlorophenol				●●●								●●●								●●●
		2,4,5-Trichlorophenol				●●●								●●●								●●●
		2,4,6-Trichlorophenol				●●●								●●●								●●●
		2,4-Dimethyl phenol				●●●								●●●								●●●
		2,4-Dinitrophenol				●●●								●●●								●●●
		2,4-Dichlorophenol				●●●								●●●								●●●
		2,6-Dichlorophenol				●●●								●●●								●●●

EFFLUENT MONITORING REGULATION – ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE Q – POLYSAR LIMITED (SARNIA)

		STREAM CLASSIFICATION AND IMIS CODE:	PR 1900				CO 0200				CO 0400				CO 0500				CO 1100			
		TOXICITY TESTS REQUIRED:	No				Yes				Yes				Yes				Yes			
		CHARACTERIZATION FREQUENCY (except for AT6 24): INTERVAL:	Quarterly 2-4 months apart				Quarterly 2-4 months apart				Quarterly 2-4 months apart				Quarterly 2-4 months apart				Quarterly 2-4 months apart			
		CHARACTERIZATION FREQUENCY FOR AT6 24: INTERVAL:	Quarterly 2-4 months apart				Quarterly 2-4 months apart				Quarterly 2-4 months apart				Quarterly 2-4 months apart				Quarterly 2-4 months apart			
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M	D	TW	W	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED																				
20	Extractables, Acid (Phenolics) (continued)	4,6-Dinitro-o-cresol				●●●								●●●								●●●
		2-Chlorophenol				●●●								●●●								●●●
		4-Chloro-3-methylphenol				●●●								●●●								●●●
		4-Nitrophenol				●●●								●●●								●●●
		m-Cresol				●●●								●●●								●●●
		o-Cresol				●●●								●●●								●●●
		p-Cresol				●●●								●●●								●●●
		Pentachlorophenol				●●●								●●●								●●●
		Phenol				●●●								●●●								●●●
23	Extractables, Neutral -Chlorinated	1,2,3,4-Tetrachlorobenzene				●●●				●●●				●●●				●●●				●●●
		1,2,3,5-Tetrachlorobenzene				●●●				●●●				●●●				●●●				●●●
		1,2,4,5-Tetrachlorobenzene				●●●				●●●				●●●				●●●				●●●
		1,2,3-Trichlorobenzene				●●●				●●●				●●●				●●●				●●●
		1,2,4-Trichlorobenzene				●●●				●●●				●●●				●●●				●●●
		2,4,5-Trichlorotoluene				●●●				●●●				●●●				●●●				●●●
		Hexachlorobenzene				●●●				●●●				●●●				●●●				●●●
		Hexachlorobutadiene				●●●				●●●				●●●				●●●				●●●
		Hexachlorocyclopentadiene				●●●				●●●				●●●				●●●				●●●
		Hexachloroethane				●●●				●●●				●●●				●●●				●●●
		Octachlorostyrene				●●●				●●●				●●●				●●●				●●●
		Pentachlorobenzene				●●●				●●●				●●●				●●●				●●●
25	Solvent Extractables	Oil and grease			●●●				●●●				●●●				●●●				●●●	
27	PCBs	PCBs (Total)																				

EFFLUENT MONITORING REGULATION – ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE Q – POLYSAR LIMITED (SARNIA)

STREAM CLASSIFICATION AND IMIS CODE:			BA 1700				OT 1400	OT 1600	ST 1300	ST 1500	ST 2000	ST 2100	ST 2200
TOXICITY TESTS REQUIRED:			Yes				Yes	Yes	No	No	No	No	No
CHARACTERIZATION FREQUENCY (except for ATG 24):			Quarterly				None	None	None	None	None	None	None
INTERVAL:			2-4 months apart										
CHARACTERIZATION FREQUENCY FOR ATG 24:			Quarterly				None	None	None	None	None	None	None
INTERVAL:			2-4 months apart										
FREQUENCY OF SAMPLING:			D	TW	W	M	M	M	M	M	M	M	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**											
2	Cyanide	Cyanide											
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●	●●●	●●●	●●●	●●●	●●●	●●●
4a	Nitrogen	Ammonia plus Ammonium											
		Total Kjeldahl nitrogen											
4b		Nitrate + Nitrite											
5a	Organic carbon (DOC)	Dissolved organic carbon (DOC)	●●●				●●●	●●●	●●●	●●●	●●●	●●●	●●●
5b		Total organic carbon (TOC) (NOTE 1)		●●●			●●●	●●●	●●●	●●●	●●●	●●●	●●●
6	Total phosphorus	Total phosphorus			●●●		●●●	●●●	●●●	●●●	●●●	●●●	●●●
7	Specific conductance	Specific conductance	●●●				●●●	●●●	●●●	●●●	●●●	●●●	●●●
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●			●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Volatile suspended solids (VSS)									●●●		
9	Total metals	Aluminum				●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Beryllium				●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Cadmium				●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Chromium				●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Cobalt				●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Copper				●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE Q - POLYSAR LIMITED (SARNIA)

		STREAM CLASSIFICATION AND IMIS CODE:	BA 1700				OT 1400	OT 1600	ST 1300	ST 1500	ST 2000	ST 2100	ST 2200
		TOXICITY TESTS REQUIRED:	Yes				Yes	Yes	No	No	No	No	No
		CHARACTERIZATION FREQUENCY (except for AT6 24):	Quarterly				None	None	None	None	None	None	None
		INTERVAL:	2-4 months apart										
		CHARACTERIZATION FREQUENCY FOR AT6 24:	Quarterly				None	None	None	None	None	None	None
		INTERVAL:	2-4 months apart										
		FREQUENCY OF SAMPLING:	D	TW	W	M	M	M	M	M	M	M	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED											
9	Total metals (continued)	Lead				●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Molybdenum				●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Nickel				●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Silver				●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Thallium				●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Vanadium				●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Zinc				●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●
10	Hydrides	Antimony							●●●		●●●	●●●	●●●
		Arsenic							●●●		●●●	●●●	●●●
		Selenium							●●●		●●●	●●●	●●●
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)				●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●
12	Mercury	Mercury											
14	Phenolics (4AAP)	Phenolics (4AAP)*						●●●	●●●	●●●	●●●	●●●	●●●
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane					●●●	●●●	●●●	●●●	●●●	●●●	●●●
		1,1,2-Trichloroethane					●●●	●●●	●●●	●●●	●●●	●●●	●●●
		1,1-Dichloroethane					●●●	●●●	●●●	●●●	●●●	●●●	●●●
		1,1-Dichloroethylene					●●●	●●●	●●●	●●●	●●●	●●●	●●●
		1,2-Dichlorobenzene					●●●	●●●	●●●	●●●	●●●	●●●	●●●
		1,2-Dichloroethane (Ethylene dichloride)					●●●	●●●	●●●	●●●	●●●	●●●	●●●
		1,2-Dichloropropane					●●●	●●●	●●●	●●●	●●●	●●●	●●●
		1,3-Dichlorobenzene					●●●	●●●	●●●	●●●	●●●	●●●	●●●

EFFLUENT MONITORING REGULATION – ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE Q – POLYSAR LIMITED (SARNIA)

STREAM CLASSIFICATION AND IMIS CODE:			BA 1700				OT 1400	OT 1600	ST 1300	ST 1500	ST 2000	ST 2100	ST 2200
TOXICITY TESTS REQUIRED:			Yes				Yes	Yes	No	No	No	No	No
CHARACTERIZATION FREQUENCY (except for AT6 24):			Quarterly				None	None	None	None	None	None	None
INTERVAL:			2-4 months apart										
CHARACTERIZATION FREQUENCY FOR AT6 24:			Quarterly				None	None	None	None	None	None	None
INTERVAL:			2-4 months apart										
FREQUENCY OF SAMPLING:			D	TW	W	M	M	M	M	M	M	M	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**											
16	Volatiles, Halogenated (continued)	1,4-Dichlorobenzene					●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Bromoform					●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Bromomethane					●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Carbon tetrachloride					●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Chlorobenzene					●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Chloroform					●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Chloromethane					●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Cis-1,3-Dichloropropylene					●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Dibromochloromethane					●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Ethylene dibromide					●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Methylene chloride					●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Tetrachloroethylene (Perchloroethylene)					●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Trans-1,2-Dichloroethylene					●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Trans-1,3-Dichloropropylene					●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Trichloroethylene					●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Trichlorofluoromethane					●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Vinyl chloride (Chloroethylene)					●●●	●●●	●●●	●●●	●●●	●●●	●●●
17	Volatiles, Non-Halogenated	Benzene					●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Styrene					●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Toluene					●●●	●●●	●●●	●●●	●●●	●●●	●●●
		o-Xylene					●●●	●●●	●●●	●●●	●●●	●●●	●●●
		m-Xylene and p-Xylene (NOTE 3)					●●●	●●●	●●●	●●●	●●●	●●●	●●●
18	Volatiles, Water Soluble	Acrolein					●●●	●●●	●●●	●●●	●●●	●●●	●●●
		Acrylonitrile					●●●	●●●	●●●	●●●	●●●	●●●	●●●

EFFLUENT MONITORING REGULATION – ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE Q – POLYSAR LIMITED (SARNIA)

		STREAM CLASSIFICATION AND IMIS CODE:	BA 1700				OT 1400	OT 1600	ST 1300	ST 1500	ST 2000	ST 2100	ST 2200
		TOXICITY TESTS REQUIRED:	Yes				Yes	Yes	No	No	No	No	No
		CHARACTERIZATION FREQUENCY (except for ATG 24):	Quarterly				None	None	None	None	None	None	None
		INTERVAL:	2-4 months apart										
		CHARACTERIZATION FREQUENCY FOR ATG 24:	Quarterly				None	None	None	None	None	None	None
		INTERVAL:	2-4 months apart										
		FREQUENCY OF SAMPLING:	D	TW	W	M	M	M	M	M	M	M	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED											
19	Extractables, Base Neutral	Acenaphthene											
		5-nitro Acenaphthene											
		Acenaphthylene											
		Anthracene											
		Benz(a)anthracene											
		Benzo(a)pyrene											
		Benzo(b)fluoranthene											
		Benzo(g,h,i)perylene											
		Benzo(k)fluoranthene											
		Biphenyl											
		Camphene											
		1-Chloronaphthalene											
		2-Chloronaphthalene											
		Chrysene											
		Dibenz(a,h)anthracene											
		Fluoranthene											
		Fluorene											
		Indeno(1,2,3-cd)pyrene											
		Indole											
		1-Methylnaphthalene											
		2-Methylnaphthalene											
		Naphthalene											
		Perylene											
		Phenanthrene											
		Pyrene											

EFFLUENT MONITORING REGULATION – ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE Q – POLYSAR LIMITED (SARNIA)

STREAM CLASSIFICATION AND IMIS CODE:			BA 1700				OT 1400	OT 1600	ST 1300	ST 1500	ST 2000	ST 2100	ST 2200
TOXICITY TESTS REQUIRED:			Yes				Yes	Yes	No	No	No	No	No
CHARACTERIZATION FREQUENCY (except for ATG 24):			Quarterly				None	None	None	None	None	None	None
INTERVAL:			2-4 months apart										
CHARACTERIZATION FREQUENCY FOR ATG 24:			Quarterly				None	None	None	None	None	None	None
INTERVAL:			2-4 months apart										
FREQUENCY OF SAMPLING:			D	TW	W	M	M	M	M	M	M	M	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**											
19	Extractables, Base Neutral (continued)	Benzyl butyl phthalate											
		Bis(2-ethylhexyl) phthalate											
		Di-n-butyl phthalate											
		4-Bromophenyl phenyl ether											
		4-Chlorophenyl phenyl ether											
		Bis(2-chloroisopropyl)ether											
		Bis(2-chloroethyl)ether											
		Diphenyl ether											
		2,4-Dinitrotoluene											
		2,6-Dinitrotoluene											
		Bis(2-chloroethoxy)methane											
		Diphenylamine (NOTE 4)											
		N-Nitrosodiphenylamine (NOTE 4)											
		N-Nitrosodi-n-propylamine											
20	Extractables, Acid (Phenolics)	2,3,4,5-Tetrachlorophenol									●●●	●●●	●●●
		2,3,4,6-Tetrachlorophenol									●●●	●●●	●●●
		2,3,5,6-Tetrachlorophenol									●●●	●●●	●●●
		2,3,4-Trichlorophenol									●●●	●●●	●●●
		2,3,5-Trichlorophenol									●●●	●●●	●●●
		2,4,5-Trichlorophenol									●●●	●●●	●●●
		2,4,6-Trichlorophenol									●●●	●●●	●●●
		2,4-Dimethyl phenol									●●●	●●●	●●●
		2,4-Dinitrophenol									●●●	●●●	●●●
		2,4-Dichlorophenol									●●●	●●●	●●●
		2,6-Dichlorophenol									●●●	●●●	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE Q - POLYSAR LIMITED (SARNIA)

		STREAM CLASSIFICATION AND IMIS CODE:	BA 1700				OT 1400	OT 1600	ST 1300	ST 1500	ST 2000	ST 2100	ST 2200
		TOXICITY TESTS REQUIRED:	Yes				Yes	Yes	No	No	No	No	No
		CHARACTERIZATION FREQUENCY (except for AT6 24):	Quarterly				None	None	None	None	None	None	None
		INTERVAL:	2-4 months apart										
		CHARACTERIZATION FREQUENCY FOR AT6 24:	Quarterly				None	None	None	None	None	None	None
		INTERVAL:	2-4 months apart										
		FREQUENCY OF SAMPLING:	D	TW	W	M	M	M	M	M	M	M	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED											
20	Extractables, Acid (Phenolics) (continued)	4,6-Dinitro-o-cresol									●●●	●●●	●●●
		2-Chlorophenol									●●●	●●●	●●●
		4-Chloro-3-methylphenol									●●●	●●●	●●●
		4-Nitrophenol									●●●	●●●	●●●
		m-Cresol									●●●	●●●	●●●
		o-Cresol									●●●	●●●	●●●
		p-Cresol									●●●	●●●	●●●
		Pentachlorophenol									●●●	●●●	●●●
		Phenol									●●●	●●●	●●●
23	Extractables, Neutral -Chlorinated	1,2,3,4-Tetrachlorobenzene							●●●		●●●	●●●	●●●
		1,2,3,5-Tetrachlorobenzene							●●●		●●●	●●●	●●●
		1,2,4,5-Tetrachlorobenzene							●●●		●●●	●●●	●●●
		1,2,3-Trichlorobenzene							●●●		●●●	●●●	●●●
		1,2,4-Trichlorobenzene							●●●		●●●	●●●	●●●
		2,4,5-Trichlorotoluene							●●●		●●●	●●●	●●●
		Hexachlorobenzene							●●●		●●●	●●●	●●●
		Hexachlorobutadiene							●●●		●●●	●●●	●●●
		Hexachlorocyclopentadiene							●●●		●●●	●●●	●●●
		Hexachloroethane							●●●		●●●	●●●	●●●
		Octachlorostyrene							●●●		●●●	●●●	●●●
		Pentachlorobenzene							●●●		●●●	●●●	●●●
25	Solvent Extractables	Oil and grease			●●●		●●●	●●●	●●●	●●●	●●●	●●●	●●●
27	PCBs	PCBs (Total)											

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE Q - POLYSAR LIMITED (SARNIA)

		STREAM CLASSIFICATION AND IMIS CODE:	EM 0700	EM 1200
		TOXICITY TESTS REQUIRED:	No	No
		CHARACTERIZATION FREQUENCY (except for AT6 24): INTERVAL:	None	None
		CHARACTERIZATION FREQUENCY FOR AT6 24: INTERVAL:	None	None
		FREQUENCY OF SAMPLING:	during discharge	during discharge
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**		
2	Cyanide	Cyanide	●●●	●●●
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●	●●●
4a	Nitrogen	Ammonia plus Ammonium	●●●	●●●
		Total Kjeldahl nitrogen	●●●	●●●
4b		Nitrate + Nitrite	●●●	●●●
5a	Organic carbon (DOC)	Dissolved organic carbon (DOC)	●●●	●●●
5b		Total organic carbon (TOC) (NOTE 1)	●●●	●●●
6	Total phosphorus	Total phosphorus	●●●	●●●
7	Specific conductance	Specific conductance	●●●	●●●
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)	●●●	●●●
		Volatile suspended solids (VSS)		
9	Total metals	Aluminum	●●●	●●●
		Beryllium	●●●	●●●
		Cadmium	●●●	●●●
		Chromium	●●●	●●●
		Cobalt	●●●	●●●
		Copper	●●●	●●●

EFFLUENT MONITORING REGULATION – ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE Q – POLYSAR LIMITED (SARNIA)

		STREAM CLASSIFICATION AND IMIS CODE:	EM 0700	EM 1200
		TOXICITY TESTS REQUIRED:	No	No
		CHARACTERIZATION FREQUENCY (except for AT6 24): INTERVAL:	None	None
		CHARACTERIZATION FREQUENCY FOR AT6 24: INTERVAL:	None	None
		FREQUENCY OF SAMPLING:	during discharge	during discharge
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**		
9	Total metals (continued)	Lead	●●●	●●●
		Molybdenum	●●●	●●●
		Nickel	●●●	●●●
		Silver	●●●	●●●
		Thallium	●●●	●●●
		Vanadium	●●●	●●●
		Zinc	●●●	●●●
10	Hydrides	Antimony	●●●	●●●
		Arsenic	●●●	●●●
		Selenium	●●●	●●●
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)	●●●	●●●
12	Mercury	Mercury		
14	Phenolics (4AAP)	Phenolics (4AAP)*	●●●	●●●
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane	●●●	●●●
		1,1,2-Trichloroethane	●●●	●●●
		1,1-Dichloroethane	●●●	●●●
		1,1-Dichloroethylene	●●●	●●●
		1,2-Dichlorobenzene	●●●	●●●
		1,2-Dichloroethane (Ethylene dichloride)	●●●	●●●
		1,2-Dichloropropane	●●●	●●●
		1,3-Dichlorobenzene	●●●	●●●

SCHEDULE Q – POLYSAR LIMITED (SARNIA)

		STREAM CLASSIFICATION AND IMIS CODE:	EM 0700	EM 1200
		TOXICITY TESTS REQUIRED:	No	No
		CHARACTERIZATION FREQUENCY (except for AT6 24): INTERVAL:	None	None
		CHARACTERIZATION FREQUENCY FOR AT6 24: INTERVAL:	None	None
		FREQUENCY OF SAMPLING:	during discharge	during discharge
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED		
16	Volatiles, Halogenated (continued)	1,4-Dichlorobenzene	●●●	●●●
		Bromoform	●●●	●●●
		Bromomethane	●●●	●●●
		Carbon tetrachloride	●●●	●●●
		Chlorobenzene	●●●	●●●
		Chloroform	●●●	●●●
		Chloromethane	●●●	●●●
		Cis-1,3-Dichloropropylene	●●●	●●●
		Dibromochloromethane	●●●	●●●
		Ethylene dibromide	●●●	●●●
		Methylene chloride	●●●	●●●
		Tetrachloroethylene (Perchloroethylene)	●●●	●●●
		Trans-1,2-Dichloroethylene	●●●	●●●
		Trans-1,3-Dichloropropylene	●●●	●●●
		Trichloroethylene	●●●	●●●
		Trichlorofluoromethane	●●●	●●●
		Vinyl chloride (Chloroethylene)	●●●	●●●
17	Volatiles, Non-Halogenated	Benzene	●●●	●●●
		Styrene	●●●	●●●
		Toluene	●●●	●●●
		o-Xylene	●●●	●●●
		m-Xylene and p-Xylene (NOTE 3)	●●●	●●●
18	Volatiles, Water Soluble	Acrolein	●●●	
		Acrylonitrile	●●●	

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE Q - POLYSAR LIMITED (SARNIA)

		STREAM CLASSIFICATION AND IMIS CODE:	EM 0700	EM 1200
		TOXICITY TESTS REQUIRED:	No	No
		CHARACTERIZATION FREQUENCY (except for AT6 24): INTERVAL:	None	None
		CHARACTERIZATION FREQUENCY FOR AT6 24: INTERVAL:	None	None
		FREQUENCY OF SAMPLING:	during discharge	during discharge
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED		
19	Extractables, Base Neutral	Acenaphthene	●●●	
		5-nitro Acenaphthene	●●●	
		Acenaphthylene	●●●	
		Anthracene	●●●	
		Benz(a)anthracene	●●●	
		Benzo(a)pyrene	●●●	
		Benzo(b)fluoranthene	●●●	
		Benzo(g,h,i)perylene	●●●	
		Benzo(k)fluoranthene	●●●	
		Biphenyl	●●●	
		Camphene	●●●	
		1-Chloronaphthalene	●●●	
		2-Chloronaphthalene	●●●	
		Chrysene	●●●	
		Dibenz(a,h)anthracene	●●●	
		Fluoranthene	●●●	
		Fluorene	●●●	
		Indeno(1,2,3-cd)pyrene	●●●	
		Indole	●●●	
		1-Methylnaphthalene	●●●	
		2-Methylnaphthalene	●●●	
		Naphthalene	●●●	
		Perylene	●●●	
		Phenanthrene	●●●	
		Pyrene	●●●	

SCHEDULE Q - POLYSAR LIMITED (SARNIA)

		STREAM CLASSIFICATION AND IMIS CODE:	EM 0700	EM 1200
		TOXICITY TESTS REQUIRED:	No	No
		CHARACTERIZATION FREQUENCY (except for ATG 24): INTERVAL:	None	None
		CHARACTERIZATION FREQUENCY FOR ATG 24: INTERVAL:	None	None
		FREQUENCY OF SAMPLING:	during discharge	during discharge
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**		
19	Extractables, Base Neutral (continued)	Benzyl butyl phthalate	●●●	
		Bis(2-ethylhexyl) phthalate	●●●	
		Di-n-butyl phthalate	●●●	
		4-Bromophenyl phenyl ether	●●●	
		4-Chlorophenyl phenyl ether	●●●	
		Bis(2-chloroisopropyl)ether	●●●	
		Bis(2-chloroethyl)ether	●●●	
		Diphenyl ether	●●●	
		2,4-Dinitrotoluene	●●●	
		2,6-Dinitrotoluene	●●●	
		Bis(2-chloroethoxy)methane	●●●	
		Diphenylamine (NOTE 4)	●●●	
		N-Nitrosodiphenylamine (NOTE 4)	●●●	
		N-Nitrosodi-n-propylamine	●●●	
20	Extractables, Acid (Phenolics)	2,3,4,5-Tetrachlorophenol	●●●	●●●
		2,3,4,6-Tetrachlorophenol	●●●	●●●
		2,3,5,6-Tetrachlorophenol	●●●	●●●
		2,3,4-Trichlorophenol	●●●	●●●
		2,3,5-Trichlorophenol	●●●	●●●
		2,4,5-Trichlorophenol	●●●	●●●
		2,4,6-Trichlorophenol	●●●	●●●
		2,4-Dimethyl phenol	●●●	●●●
		2,4-Dinitrophenol	●●●	●●●
		2,4-Dichlorophenol	●●●	●●●
		2,6-Dichlorophenol	●●●	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE Q - POLYSAR LIMITED (SARNIA)

		STREAM CLASSIFICATION AND IMIS CODE:	EM1 0700	EM 1200
		TOXICITY TESTS REQUIRED:	No	No
		CHARACTERIZATION FREQUENCY (except for AT6 24): INTERVAL:	None	None
		CHARACTERIZATION FREQUENCY FOR AT6 24: INTERVAL:	None	None
		FREQUENCY OF SAMPLING:	during discharge	during discharge
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED		
20	Extractables, Acid (Phenolics) (continued)	4,6-Dinitro-o-cresol	●●●	●●●
		2-Chlorophenol	●●●	●●●
		4-Chloro-3-methylphenol	●●●	●●●
		4-Nitrophenol	●●●	●●●
		m-Cresol	●●●	●●●
		o-Cresol	●●●	●●●
		p-Cresol	●●●	●●●
		Pentachlorophenol	●●●	●●●
		Phenol	●●●	●●●
23	Extractables, Neutral -Chlorinated	1,2,3,4-Tetrachlorobenzene	●●●	●●●
		1,2,3,5-Tetrachlorobenzene	●●●	●●●
		1,2,4,5-Tetrachlorobenzene	●●●	●●●
		1,2,3-Trichlorobenzene	●●●	●●●
		1,2,4-Trichlorobenzene	●●●	●●●
		2,4,5-Trichlorotoluene	●●●	●●●
		Hexachlorobenzene	●●●	●●●
		Hexachlorobutadiene	●●●	●●●
		Hexachlorocyclopentadiene	●●●	●●●
		Hexachloroethane	●●●	●●●
		Octachlorostyrene	●●●	●●●
		Pentachlorobenzene	●●●	●●●
25	Solvent Extractables	Oil and grease	●●●	●●●
27	PCBs	PCBs (Total)	●●●	

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE R - ROHM AND HAAS CANADA INC. (MORRISBURG)

STREAM CLASSIFICATION AND IMIS CODE:			PR 0200				CO 0100				ST 0300
TOXICITY TESTS REQUIRED:			No				Yes				No
CHARACTERIZATION FREQUENCY (except for AT6 24):			Quarterly				Quarterly				None
INTERVAL:			2-4 months apart				2-4 months apart				
CHARACTERIZATION FREQUENCY FOR AT6 24:			Quarterly				Quarterly				None
INTERVAL:			2-4 months apart				2-4 months apart				
FREQUENCY OF SAMPLING:			D	TW	W	M	D	TW	W	M	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**									
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●				●●●
5a	Organic carbon (DOC)	Dissolved organic carbon (DOC)	●●●				●●●				●●●
5b		Total organic carbon (TOC) (NOTE 1)		●●●				●●●			●●●
6	Total phosphorus	Total phosphorus				●●●			●●●		●●●
7	Specific conductance	Specific conductance	●●●				●●●				●●●
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●				●●●			●●●
		Volatile suspended solids (VSS)									
9	Total metals	Aluminum				●●●				●●●	●●●
		Beryllium				●●●				●●●	●●●
		Cadmium				●●●				●●●	●●●
		Chromium				●●●				●●●	●●●
		Cobalt				●●●				●●●	●●●
		Copper				●●●				●●●	●●●
		Lead				●●●				●●●	●●●
		Molybdenum				●●●				●●●	●●●
		Nickel				●●●				●●●	●●●
		Silver				●●●				●●●	●●●
		Thallium				●●●				●●●	●●●
		Vanadium				●●●				●●●	●●●
		Zinc				●●●				●●●	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE R - ROHM AND HAAS CANADA INC. (MORRISBURG)

STREAM CLASSIFICATION AND IMIS CODE:			PR 0200				CO 0100				ST 0300
TOXICITY TESTS REQUIRED:			No				Yes				No
CHARACTERIZATION FREQUENCY (except for AT6 24):			Quarterly				Quarterly				None
INTERVAL:			2-4 months apart				2-4 months apart				
CHARACTERIZATION FREQUENCY FOR AT6 24:			Quarterly				Quarterly				None
INTERVAL:			2-4 months apart				2-4 months apart				
FREQUENCY OF SAMPLING:			D	TW	W	M	D	TW	W	M	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**									
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)				●●●				●●●	●●●
14	Phenolics (4AAP)	Phenolics (4AAP)*			●●●					●●●	●●●
15	Sulphide	Sulphide				●●●				●●●	●●●
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane				●●●				●●●	
		1,1,2-Trichloroethane				●●●				●●●	
		1,1-Dichloroethane				●●●				●●●	
		1,1-Dichloroethylene				●●●				●●●	
		1,2-Dichlorobenzene				●●●				●●●	
		1,2-Dichloroethane (Ethylene dichloride)				●●●				●●●	
		1,2-Dichloropropane				●●●				●●●	
		1,3-Dichlorobenzene				●●●				●●●	
		1,4-Dichlorobenzene				●●●				●●●	
		Bromoform				●●●				●●●	
		Bromomethane				●●●				●●●	
		Carbon tetrachloride				●●●				●●●	
		Chlorobenzene				●●●				●●●	
		Chloroform				●●●				●●●	
		Chloromethane				●●●				●●●	
		Cis-1,3-Dichloropropylene				●●●				●●●	
		Dibromochloromethane				●●●				●●●	
		Ethylene dibromide				●●●				●●●	
		Methylene chloride				●●●				●●●	
		Tetrachloroethylene (Perchloroethylene)				●●●				●●●	

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE R - ROHM AND HAAS CANADA INC. (MORRISBURG)

		STREAM CLASSIFICATION AND IMIS CODE:	PR 0200				CO 0100				ST 0300
		TOXICITY TESTS REQUIRED:	No				Yes				No
		CHARACTERIZATION FREQUENCY (except for AT6 24):	Quarterly				Quarterly				None
		INTERVAL:	2-4 months apart				2-4 months apart				
		CHARACTERIZATION FREQUENCY FOR AT6 24:	Quarterly				Quarterly				None
		INTERVAL:	2-4 months apart				2-4 months apart				
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED									
16	Volatiles, Halogenated (continued)	Trans-1,2-Dichloroethylene				●●●				●●●	
		Trans-1,3-Dichloropropylene				●●●				●●●	
		Trichloroethylene				●●●				●●●	
		Trichlorofluoromethane				●●●				●●●	
		Vinyl chloride (Chloroethylene)				●●●				●●●	
17	Volatiles, Non-Halogenated	Benzene				●●●				●●●	
		Styrene				●●●				●●●	
		Toluene				●●●				●●●	
		o-Xylene				●●●				●●●	
		m-Xylene and p-Xylene (NOTE 3)				●●●				●●●	
23	Extractables, Neutral -Chlorinated	1,2,3,4-Tetrachlorobenzene				●●●					
		1,2,3,5-Tetrachlorobenzene				●●●					
		1,2,4,5-Tetrachlorobenzene				●●●					
		1,2,3-Trichlorobenzene				●●●					
		1,2,4-Trichlorobenzene				●●●					
		2,4,5-Trichlorotoluene				●●●					
		Hexachlorobenzene				●●●					
		Hexachlorobutadiene				●●●					
		Hexachlorocyclopentadiene				●●●					
		Hexachloroethane				●●●					
		Octachlorostyrene				●●●					
		Pentachlorobenzene				●●●					
25	Solvent Extractables	Oil and grease			●●●				●●●		●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE S - UNIROYAL CHEMICAL LTD. (ELMIRA)

		NAME OF STREAM AND CLASSIFICATION CODE:	CO 0700				CO 0800				CO 0900				OT 0100	OT 0300	OT 0600
		TOXICITY TESTS REQUIRED:	Yes				Yes				Yes				Yes	Yes	Yes
		CHARACTERIZATION FREQUENCY (except for AT6 24):	Quarterly				Quarterly				Quarterly				None	None	None
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart						
		CHARACTERIZATION FREQUENCY FOR AT6 24:	Quarterly				Quarterly				Quarterly				None	None	None
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart						
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	M	M	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED															
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●				●●●				●●●				●●●	●●●	●●●
4a	Nitrogen	Ammonia plus Ammonium			●●●				●●●				●●●		●●●	●●●	●●●
		Total Kjeldahl nitrogen			●●●				●●●				●●●		●●●	●●●	●●●
4b		Nitrate + Nitrite			●●●				●●●				●●●		●●●	●●●	●●●
5a	Organic carbon (DOC)	Dissolved organic carbon (DOC)	●●●				●●●				●●●				●●●	●●●	●●●
5b		Total organic carbon (TOC) (NOTE 1)		●●●				●●●				●●●			●●●	●●●	●●●
6	Total phosphorus	Total phosphorus			●●●				●●●				●●●		●●●	●●●	●●●
7	Specific conductance	Specific conductance	●●●				●●●				●●●				●●●	●●●	●●●
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)		●●●				●●●				●●●			●●●	●●●	●●●
		Volatile suspended solids (VSS)															
9	Total metals	Aluminum				●●●				●●●				●●●	●●●	●●●	●●●
		Beryllium				●●●				●●●				●●●	●●●	●●●	●●●
		Cadmium				●●●				●●●				●●●	●●●	●●●	●●●
		Chromium				●●●				●●●				●●●	●●●	●●●	●●●
		Cobalt				●●●				●●●				●●●	●●●	●●●	●●●
		Copper		●●●						●●●				●●●	●●●	●●●	●●●
		Lead				●●●				●●●				●●●	●●●	●●●	●●●
		Molybdenum				●●●				●●●				●●●	●●●	●●●	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE 5 - UNIROYAL CHEMICAL LTD. (ELMIRA)

		NAME OF STREAM AND CLASSIFICATION CODE:	CO 0700				CO 0800				CO 0900				OT 0100	OT 0300	OT 0600
		TOXICITY TESTS REQUIRED:	Yes				Yes				Yes				Yes	Yes	Yes
		CHARACTERIZATION FREQUENCY (except for ATG 24):	Quarterly				Quarterly				Quarterly				None	None	None
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart						
		CHARACTERIZATION FREQUENCY FOR ATG 24:	Quarterly				Quarterly				Quarterly				None	None	None
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart						
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	M	M	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED															
9	Total metals (continued)	Nickel				●●●				●●●				●●●	●●●	●●●	●●●
		Silver				●●●				●●●				●●●	●●●	●●●	●●●
		Thallium				●●●				●●●				●●●	●●●	●●●	●●●
		Vanadium				●●●				●●●				●●●	●●●	●●●	●●●
		Zinc				●●●			●●●				●●●		●●●	●●●	●●●
10	Hydrides	Antimony				●●●				●●●				●●●	●●●	●●●	●●●
		Arsenic				●●●				●●●				●●●	●●●	●●●	●●●
		Selenium				●●●				●●●				●●●	●●●	●●●	●●●
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)				●●●				●●●				●●●	●●●	●●●	●●●
12	Mercury	Mercury				●●●				●●●				●●●	●●●	●●●	●●●
14	Phenolics (4AAP)	Phenolics (4AAP)*				●●●			●●●					●●●	●●●	●●●	●●●
15	Sulphide	Sulphide			●●●				●●●				●●●		●●●	●●●	●●●
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane				●●●				●●●				●●●	●●●	●●●	●●●
		1,1,2-Trichloroethane				●●●				●●●				●●●	●●●	●●●	●●●
		1,1-Dichloroethane				●●●				●●●				●●●	●●●	●●●	●●●
		1,1-Dichloroethylene				●●●				●●●				●●●	●●●	●●●	●●●
		1,2-Dichlorobenzene				●●●				●●●				●●●	●●●	●●●	●●●
		1,2-Dichloroethane (Ethylene dichloride)				●●●				●●●				●●●	●●●	●●●	●●●
		1,2-Dichloropropane				●●●				●●●				●●●	●●●	●●●	●●●
		1,3-Dichlorobenzene				●●●				●●●				●●●	●●●	●●●	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE 5 - UNIROYAL CHEMICAL LTD. (ELMIRA)

		NAME OF STREAM AND CLASSIFICATION CODE:	CO 0700				CO 0800				CO 0900				OT 0100	OT 0300	OT 0600
		TOXICITY TESTS REQUIRED:	Yes				Yes				Yes				Yes	Yes	Yes
		CHARACTERIZATION FREQUENCY (except for ATG 24):	Quarterly				Quarterly				Quarterly				None	None	None
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart						
		CHARACTERIZATION FREQUENCY FOR ATG 24:	Quarterly				Quarterly				Quarterly				None	None	None
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart						
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	M	M	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED															
16	Volatiles, Halogenated (continued)	1,4-Dichlorobenzene				●●●				●●●				●●●	●●●	●●●	●●●
		Bromoform				●●●				●●●				●●●	●●●	●●●	●●●
		Bromomethane				●●●				●●●				●●●	●●●	●●●	●●●
		Carbon tetrachloride				●●●				●●●				●●●	●●●	●●●	●●●
		Chlorobenzene				●●●				●●●				●●●	●●●	●●●	●●●
		Chloroform				●●●				●●●				●●●	●●●	●●●	●●●
		Chloromethane				●●●				●●●				●●●	●●●	●●●	●●●
		Cis-1,3-Dichloropropylene				●●●				●●●				●●●	●●●	●●●	●●●
		Dibromochloromethane				●●●				●●●				●●●	●●●	●●●	●●●
		Ethylene dibromide				●●●				●●●				●●●	●●●	●●●	●●●
		Methylene chloride				●●●				●●●				●●●	●●●	●●●	●●●
		Tetrachloroethylene (Perchloroethylene)				●●●				●●●				●●●	●●●	●●●	●●●
		Trans-1,2-Dichloroethylene				●●●				●●●				●●●	●●●	●●●	●●●
		Trans-1,3-Dichloropropylene				●●●				●●●				●●●	●●●	●●●	●●●
		Trichloroethylene				●●●				●●●				●●●	●●●	●●●	●●●
		Trichlorofluoromethane				●●●				●●●				●●●	●●●	●●●	●●●
		Vinyl chloride (Chloroethylene)				●●●				●●●				●●●	●●●	●●●	●●●
17	Volatiles, Non-Halogenated	Benzene				●●●				●●●				●●●	●●●	●●●	●●●
		Styrene				●●●				●●●				●●●	●●●	●●●	●●●
		Toluene				●●●				●●●				●●●	●●●	●●●	●●●
		o-Xylene				●●●				●●●				●●●	●●●	●●●	●●●
		m-Xylene and p-Xylene (NOTE 3)				●●●				●●●				●●●	●●●	●●●	●●●
18	Volatiles, Water Soluble	Acrolein				●●●				●●●				●●●			
		Acrylonitrile				●●●				●●●				●●●			

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE 5 - UNIROYAL CHEMICAL LTD. (ELMIRA)

NAME OF STREAM AND CLASSIFICATION CODE:		CO 0700				CO 0800				CO 0900				OT 0100	OT 0300	OT 0600
TOXICITY TESTS REQUIRED:		Yes				Yes				Yes				Yes	Yes	Yes
CHARACTERIZATION FREQUENCY (except for ATG 24):		Quarterly				Quarterly				Quarterly				None	None	None
INTERVAL:		2-4 months apart				2-4 months apart				2-4 months apart						
CHARACTERIZATION FREQUENCY FOR ATG 24:		Quarterly				Quarterly				Quarterly				None	None	None
INTERVAL:		2-4 months apart				2-4 months apart				2-4 months apart						
FREQUENCY OF SAMPLING:		D	TW	W	M	D	TW	W	M	D	TW	W	M	M	M	M
ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED															
19 Extractables, Base Neutral	Acenaphthene				●●●				●●●				●●●			
	5-nitro Acenaphthene				●●●				●●●				●●●			
	Acenaphthylene				●●●				●●●				●●●			
	Anthracene				●●●				●●●				●●●			
	Benz(a)anthracene				●●●				●●●				●●●			
	Benzo(a)pyrene				●●●				●●●				●●●			
	Benzo(b)fluoranthene				●●●				●●●				●●●			
	Benzo(g,h,i)perylene				●●●				●●●				●●●			
	Benzo(k)fluoranthene				●●●				●●●				●●●			
	Biphenyl				●●●				●●●				●●●			
	Camphene				●●●				●●●				●●●			
	1-Chloronaphthalene				●●●				●●●				●●●			
	2-Chloronaphthalene				●●●				●●●				●●●			
	Chrysene				●●●				●●●				●●●			
	Dibenz(a,h)anthracene				●●●				●●●				●●●			
	Fluoranthene				●●●				●●●				●●●			
	Fluorene				●●●				●●●				●●●			
	Indeno(1,2,3-cd)pyrene				●●●				●●●				●●●			
	Indole				●●●				●●●				●●●			
	1-Methylnaphthalene				●●●				●●●				●●●			
	2-Methylnaphthalene				●●●				●●●				●●●			
	Naphthalene				●●●				●●●				●●●			
	Perylene				●●●				●●●				●●●			
	Phenanthrene				●●●				●●●				●●●			
	Pyrene				●●●				●●●				●●●			

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE 5 - UNIROYAL CHEMICAL LTD. (ELMIRA)

NAME OF STREAM AND CLASSIFICATION CODE:			CO 0700				CO 0800				CO 0900				OT 0100	OT 0300	OT 0600
TOXICITY TESTS REQUIRED:			Yes				Yes				Yes				Yes	Yes	Yes
CHARACTERIZATION FREQUENCY (except for AT6 24):			Quarterly				Quarterly				Quarterly				None	None	None
INTERVAL:			2-4 months apart				2-4 months apart				2-4 months apart						
CHARACTERIZATION FREQUENCY FOR AT6 24:			Quarterly				Quarterly				Quarterly				None	None	None
INTERVAL:			2-4 months apart				2-4 months apart				2-4 months apart						
FREQUENCY OF SAMPLING:			D	TW	W	M	D	TW	W	M	D	TW	W	M	M	M	M
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED															
19	Extractables, Base Neutral (continued)	Benzyl butyl phthalate															
		Bis(2-ethylhexyl) phthalate															
		Di-n-butyl phthalate															
		4-Bromophenyl phenyl ether															
		4-Chlorophenyl phenyl ether															
		Bis(2-chloroisopropyl)ether															
		Bis(2-chloroethyl)ether															
		Diphenyl ether															
		2,4-Dinitrotoluene															
		2,6-Dinitrotoluene															
		Bis(2-chloroethoxy)methane															
		Diphenylamine (NOTE 4)															
		N-Nitrosodiphenylamine (NOTE 4)															
		N-Nitrosodi-n-propylamine															
20	Extractables, Acid (Phenolics)	2,3,4,5-Tetrachlorophenol				●●●				●●●				●●●			
		2,3,4,6-Tetrachlorophenol				●●●				●●●				●●●			
		2,3,5,6-Tetrachlorophenol				●●●				●●●				●●●			
		2,3,4-Trichlorophenol				●●●				●●●				●●●			
		2,3,5-Trichlorophenol				●●●				●●●				●●●			
		2,4,5-Trichlorophenol				●●●				●●●				●●●			
		2,4,6-Trichlorophenol				●●●				●●●				●●●			
		2,4-Dimethyl phenol				●●●				●●●				●●●			
		2,4-Dinitrophenol				●●●				●●●				●●●			
		2,4-Dichlorophenol				●●●				●●●				●●●			
		2,6-Dichlorophenol				●●●				●●●				●●●			

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE S - UNIROYAL CHEMICAL LTD. (ELMIRA)

		NAME OF STREAM AND CLASSIFICATION CODE:	CO 0700				CO 0800				CO 0900				OT 0100	OT 0300	OT 0600
		TOXICITY TESTS REQUIRED:	Yes				Yes				Yes				Yes	Yes	Yes
		CHARACTERIZATION FREQUENCY (except for ATG 24):	Quarterly				Quarterly				Quarterly				None	None	None
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart						
		CHARACTERIZATION FREQUENCY FOR ATG 24:	Quarterly				Quarterly				Quarterly				None	None	None
		INTERVAL:	2-4 months apart				2-4 months apart				2-4 months apart						
		FREQUENCY OF SAMPLING:	D	TW	W	M	D	TW	W	M	D	TW	W	M	M	M	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED															
20	Extractables, Acid (Phenolics) (continued)	4,6-Dinitro-o-cresol				●●●				●●●				●●●			
		2-Chlorophenol				●●●				●●●				●●●			
		4-Chloro-3-methylphenol				●●●				●●●				●●●			
		4-Nitrophenol				●●●				●●●				●●●			
		m-Cresol				●●●				●●●				●●●			
		o-Cresol				●●●				●●●				●●●			
		p-Cresol				●●●				●●●				●●●			
		Pentachlorophenol				●●●				●●●				●●●			
		Phenol				●●●				●●●				●●●			
25	Solvent Extractables	Oil and grease			●●●				●●●				●●●		●●●	●●●	●●●

EFFLUENT MONITORING REGULATION – ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE S - UNIROYAL CHEMICAL LTD. (ELMIRA)

		NAME OF STREAM AND CLASSIFICATION CODE:	ST 0200	ST 0400
		TOXICITY TESTS REQUIRED:	No	No
		CHARACTERIZATION FREQUENCY (except for ATG 24): INTERVAL:	None	None
		CHARACTERIZATION FREQUENCY FOR ATG 24: INTERVAL:	None	None
		FREQUENCY OF SAMPLING:	M	M
ANALYTICAL TEST GROUP		**PARAMETERS TO BE ANALYZED**		
3	Hydrogen ion (pH)	Hydrogen ion (pH)	●●●	●●●
4a	Nitrogen	Ammonia plus Ammonium	●●●	●●●
		Total Kjeldahl nitrogen	●●●	●●●
4b		Nitrate + Nitrite	●●●	●●●
5a	Organic carbon (DOC)	Dissolved organic carbon (DOC)	●●●	●●●
5b		Total organic carbon (TOC) (NOTE 1)	●●●	●●●
6	Total phosphorus	Total phosphorus	●●●	●●●
7	Specific conductance	Specific conductance	●●●	●●●
8	Suspended solids (TSS/VSS)	Total suspended solids (TSS)	●●●	●●●
		Volatile suspended solids (VSS)		
9	Total metals	Aluminum	●●●	●●●
		Beryllium	●●●	●●●
		Cadmium	●●●	●●●
		Chromium	●●●	●●●
		Cobalt	●●●	●●●
		Copper	●●●	●●●
		Lead	●●●	●●●
		Molybdenum	●●●	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE 5 - UNIROYAL CHEMICAL LTD. (ELMIRA)

		NAME OF STREAM AND CLASSIFICATION CODE:	ST 0200	ST 0400
		TOXICITY TESTS REQUIRED:	No	No
		CHARACTERIZATION FREQUENCY (except for ATG 24): INTERVAL:	None	None
		CHARACTERIZATION FREQUENCY FOR ATG 24: INTERVAL:	None	None
		FREQUENCY OF SAMPLING:	M	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED		
9	Total metals (continued)	Nickel	●●●	●●●
		Silver	●●●	●●●
		Thallium	●●●	●●●
		Vanadium	●●●	●●●
		Zinc	●●●	●●●
10	Hydrides	Antimony	●●●	●●●
		Arsenic	●●●	●●●
		Selenium	●●●	●●●
11	Chromium (Hexavalent)	Chromium (Hexavalent) (NOTE 2)	●●●	●●●
12	Mercury	Mercury	●●●	●●●
14	Phenolics (4AAP)	Phenolics (4AAP)*	●●●	●●●
15	Sulphide	Sulphide	●●●	●●●
16	Volatiles, Halogenated	1,1,2,2-Tetrachloroethane	●●●	●●●
		1,1,2-Trichloroethane	●●●	●●●
		1,1-Dichloroethane	●●●	●●●
		1,1-Dichloroethylene	●●●	●●●
		1,2-Dichlorobenzene	●●●	●●●
		1,2-Dichloroethane (Ethylene dichloride)	●●●	●●●
		1,2-Dichloropropane	●●●	●●●
		1,3-Dichlorobenzene	●●●	●●●

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE 5 - UNIROYAL CHEMICAL LTD. (ELMIRA)

		NAME OF STREAM AND CLASSIFICATION CODE:	ST 0200	ST 0400
		TOXICITY TESTS REQUIRED:	No	No
		CHARACTERIZATION FREQUENCY (except for ATG 24): INTERVAL:	None	None
		CHARACTERIZATION FREQUENCY FOR ATG 24: INTERVAL:	None	None
		FREQUENCY OF SAMPLING:	M1	M1
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED		
16	Volatiles, Halogenated (continued)	1,4-Dichlorobenzene	●●●	●●●
		Bromoform	●●●	●●●
		Bromomethane	●●●	●●●
		Carbon tetrachloride	●●●	●●●
		Chlorobenzene	●●●	●●●
		Chloroform	●●●	●●●
		Chloromethane	●●●	●●●
		Cis-1,3-Dichloropropylene	●●●	●●●
		Dibromochloromethane	●●●	●●●
		Ethylene dibromide	●●●	●●●
		Methylene chloride	●●●	●●●
		Tetrachloroethylene (Perchloroethylene)	●●●	●●●
		Trans-1,2-Dichloroethylene	●●●	●●●
		Trans-1,3-Dichloropropylene	●●●	●●●
		Trichloroethylene	●●●	●●●
		Trichlorofluoromethane	●●●	●●●
		Vinyl chloride (Chloroethylene)	●●●	●●●
17	Volatiles, Non-Halogenated	Benzene	●●●	●●●
		Styrene	●●●	●●●
		Toluene	●●●	●●●
		o-Xylene	●●●	●●●
		m-Xylene and p-Xylene (NOTE 3)	●●●	●●●
18	Volatiles, Water Soluble	Acrolein		
		Acrylonitrile		

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE 5 - UNIROYAL CHEMICAL LTD. (ELMIRA)

		NAME OF STREAM AND CLASSIFICATION CODE:	ST 0200	ST 0400
		TOXICITY TESTS REQUIRED:	No	No
		CHARACTERIZATION FREQUENCY (except for AT6 24): INTERVAL:	None	None
		CHARACTERIZATION FREQUENCY FOR AT6 24: INTERVAL:	None	None
		FREQUENCY OF SAMPLING:	11	11
ANALYTICAL TEST GROUP		PARAMETERS TO BE ANALYZED		
19	Extractables, Base Neutral	Acenaphthene		
		5-nitro Acenaphthene		
		Acenaphthylene		
		Anthracene		
		Benz(a)anthracene		
		Benzo(a)pyrene		
		Benzo(b)fluoranthene		
		Benzo(g,h,i)perylene		
		Benzo(k)fluoranthene		
		Biphenyl		
		Camphene		
		1-Chloronaphthalene		
		2-Chloronaphthalene		
		Chrysene		
		Dibenz(a,h)anthracene		
		Fluoranthene		
		Fluorene		
		Indeno(1,2,3-cd)pyrene		
		Indole		
		1-Methylnaphthalene		
		2-Methylnaphthalene		
		Naphthalene		
		Perylene		
		Phenanthrene		
		Pyrene		

SCHEDULE 5 - UNIROYAL CHEMICAL LTD. (ELMIRA)

		NAME OF STREAM AND CLASSIFICATION CODE:	ST 0200	ST 0400
		TOXICITY TESTS REQUIRED:	No	No
		CHARACTERIZATION FREQUENCY (except for ATG 24): INTERVAL:	None	None
		CHARACTERIZATION FREQUENCY FOR ATG 24: INTERVAL:	None	None
		FREQUENCY OF SAMPLING:	M	M
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED		
19	Extractables, Base Neutral (continued)	Benzyl butyl phthalate		
		Bis(2-ethylhexyl) phthalate		
		Di-n-butyl phthalate		
		4-Bromophenyl phenyl ether		
		4-Chlorophenyl phenyl ether		
		Bis(2-chloroisopropyl)ether		
		Bis(2-chloroethyl)ether		
		Diphenyl ether		
		2,4-Dinitrotoluene		
		2,6-Dinitrotoluene		
		Bis(2-chloroethoxy)methane		
		Diphenylamine (NOTE 4)		
		N-Nitrosodiphenylamine (NOTE 4)		
		N-Nitrosodi-n-propylamine		
20	Extractables, Acid (Phenolics)	2,3,4,5-Tetrachlorophenol		
		2,3,4,6-Tetrachlorophenol		
		2,3,5,6-Tetrachlorophenol		
		2,3,4-Trichlorophenol		
		2,3,5-Trichlorophenol		
		2,4,5-Trichlorophenol		
		2,4,6-Trichlorophenol		
		2,4-Dimethyl phenol		
		2,4-Dinitrophenol		
		2,4-Dichlorophenol		
		2,6-Dichlorophenol		

EFFLUENT MONITORING REGULATION - ORGANIC CHEMICAL MANUFACTURING SECTOR

SCHEDULE S - UNIROYAL CHEMICAL LTD. (ELMIRA)

		NAME OF STREAM AND CLASSIFICATION CODE:	ST 020	ST 0400
		TOXICITY TESTS REQUIRED:	No	No
		CHARACTERIZATION FREQUENCY (except for ATG 24): INTERVAL:	None	None
		CHARACTERIZATION FREQUENCY FOR ATG 24: INTERVAL:	None	None
		FREQUENCY OF SAMPLING:	11	11
	ANALYTICAL TEST GROUP	PARAMETERS TO BE ANALYZED		
20	Extractables, Acid (Phenolics) (continued)	4,6-Dinitro-o-cresol		
		2-Chlorophenol		
		4-Chloro-3-methylphenol		
		4-Nitrophenol		
		m-Cresol		
		o-Cresol		
		p-Cresol		
		Pentachlorophenol		
		Phenol		
25	Solvent Extractables	Oil and grease	●●●	●●●

PART IV

EXPLANATORY NOTES TO THE DRAFT EFFLUENT MONITORING REGULATION FOR THE ORGANIC CHEMICAL MANUFACTURING SECTOR

PART IV - EXPLANATORY NOTES TO THE DRAFT EFFLUENT MONITORING REGULATION FOR THE ORGANIC CHEMICAL MANUFACTURING SECTOR

Introduction

The Explanatory Notes are meant to provide, where appropriate, an expanded description of each of the sections in the Draft Effluent Monitoring Regulation for the Organic Chemical Manufacturing (OCM) Sector in order to further the reader's understanding of the requirements.

In conjunction with the protocols and procedures outlined in Ontario Regulation 358/88, the General Effluent Monitoring Regulation, the OCM Regulation specifies the effluent monitoring requirements for each discharger, including sampling, analysis, flow measurement, toxicity testing and reporting.

Section 1: Definitions

This section does not redefine terms which are already defined in the Environmental Protection Act under which the OCM Regulation is written.

This section of the Regulation provides:

- clarification of terms used in the Regulation having several possible interpretations;
- definitions of technical terms used in the Regulation which may not be in common usage;
- definitions for those terms which have a different meaning in the Regulation than those found in a dictionary or through common use;
- definitions of terms with an alternate use in the OCM Regulation from that in the General Regulation; and
- definitions of terms specific to the OCM Sector.

Subsection 1(2) states that the definitions in section 1 of the General Regulation also apply to this Regulation. However, a re-defined term in the OCM Regulation supercedes that of the General Regulation.

All of the definitions in the General Regulation have been applied to the OCM Regulation with the following exceptions:

- characterization has been redefined in the OCM Regulation to reference the OCM Sector characterization list which is specific to the OCM Sector;
- combined effluent has been redefined from that in the General Regulation in order to exclude waste disposal site effluent as a component of a combined effluent with once-through cooling water;

- a final discharge sampling point has been defined as it is specific to the OCM Sector. The regulation imposes a daily monitoring and toxicity testing duty on all final discharges;

- waste disposal site is redefined in the OCM Regulation from that in the Environmental Protection Act to provide a more accurate description of the waste disposal sites found in the OCM Sector.

The following definitions are included in the OCM Regulation rather than the General Regulation as they are referred to only in the context of the OCM Regulation:

- inspection sample;
- process change;
- semi-annually;
- travelling blank sample;
- travelling spiked blank sample;
- waste disposal site effluent sampling point;
- waste disposal site effluent stream.

Section 2: Purpose

The purpose of the OCM Regulation is to establish a data base on effluent quality in the organic chemical manufacturing sector that, along with other pertinent information such as available treatment technology, will be used in the development of effluent limits for the OCM sector and to quantify the mass loadings of monitored contaminants discharged into surface watercourses.

Section 3: Application

Section 3 lists the organic chemical manufacturing facilities to which this Regulation applies and indicates that there are site-specific monitoring schedules within the Regulation which apply to each facility.

Each of the monitoring schedules provides a code for each effluent stream. Coding of the streams was initiated at the request of industry in order to better protect confidential business information. The code consists of two letters and four digits. The key to the codes is provided in the legend to the monitoring schedules in the Regulation. The four digit code represents the control point numbers in the MISA data handling system corresponding to each effluent stream.

The link with the General Regulation is established by stating that all monitoring obligations of the OCM Regulation shall be carried out in accordance with the General Regulation and that this Regulation is a Sectoral Effluent Monitoring Regulation in the context of the General Regulation.

Subsection 3(5) is intended to cover the requirements performed by persons other than the direct discharger. That is, a consultant or laboratory that collects and/or analyses the samples for the discharger has in effect carried out the obligations of that discharger.

It is the intent of the Ministry that the MISA Regulation requirements shall replace the monitoring requirements for those effluents under Certificates of Approval or Control Orders for the duration of the Regulation in cases of duplicate requirements. This override will not extend to any effluent stream not monitored in the Regulation and for which monitoring is required to assess the performance of various treatment systems or processes.

Section 4: Sampling Points

This section specifies that a sampling point must be established by the direct discharger for each effluent stream specified in the site-specific monitoring schedules. These sampling points must be used for all sampling required by the OCM Regulation unless an alternate sampling location is deemed acceptable by a Regional Director of the Ministry of the Environment.

In cases where process effluent or batch discharge effluent streams discharge into a combined effluent stream, each of the constituent streams must be sampled on the same day for characterization, thrice weekly, weekly and monthly routine monitoring. This requirement will allow a comparison of the analytical results for each constituent effluent stream with those for the combined effluent stream. The data will also be used for mass balance purposes to provide an indication of dilution effects.

Independent process effluent, combined effluent and batch discharge effluent streams, however, may be sampled at the respective specified frequencies on different days within the month.

Section 5: Characterization

Characterization samples must be collected and analyzed according to the principles and protocols outlined in sections 3 and 4 of the General Regulation for sampling and analysis respectively.

The site-specific monitoring schedules for each direct discharger indicate the required frequency and sampling intervals for performing characterization sampling and analyses on process effluent, combined effluent and batch discharge samples under the Regulation.

Characterization is specified on a quarterly or semi-annual basis depending on the complexity of the effluent stream as outlined in the OCM Regulation development document. Sampling intervals are specified in order to ensure that the samples are representative of discrete events and to provide an indication of seasonal impact on the effluents.

Characterization has been split into two separate requirements - analysis for dioxins/furans (analytical test group 24) and analysis for the remaining analytical test groups. The basis for the frequency assignment is outlined in the OCM Regulation development document.

Collection of the samples for analysis for dioxins/furans must be carried out at the same time as samples are collected for analysis of the remaining analytical test groups, in cases where the sampling requirements coincide. That is, if

both sets of samples are required at differing frequencies, semi-annually and quarterly, the semi-annual samples for dioxins/furans must be collected on the same day as one of the quarterly characterization samples. This will provide a more complete picture of the composition of the effluents.

Characterization requires collecting and analyzing a sample for the parameters listed in Column 2 of Schedule AA in the Regulation, which lists conventional parameters and the OCM Sector List. The following analytical test groups are required for characterization:

- Group 1 Chemical Oxygen Demand (COD);
- Group 2 Cyanide;
- Group 3 Hydrogen ion (pH);
- Group 4a Ammonia plus Ammonium;
  Total Kjeldahl nitrogen;
- Group 4b Nitrate + Nitrite;
- Group 5a Dissolved Organic Carbon (DOC);
- Group 5b Total Organic Carbon (TOC)
  (only if TSS > 15 mg/L);
- Group 6 Total Phosphorus;
- Group 7 Specific conductance;
- Group 8 Total Suspended Solids (TSS);
  Volatile Suspended Solids (VSS);
- Group 9 Total metals;
- Group 10 Hydrides;
- Group 11 Chromium (Hexavalent)
  (only if Total Cr > 1 mg/L);
- Group 12 Mercury;
- Group 13 Total alkyl lead
  (only if Total Pb > 1 mg/L);
- Group 14 Phenolics (4AAP);
- Group 15 Sulphide;
- Group 16 Volatiles, Halogenated;
- Group 17 Volatiles, Non-Halogenated;
- Group 18 Volatiles, Water Soluble;
- Group 19 Extractables, Base Neutral;
- Group 20 Extractables, Acid (Phenolics);
- Group 23 Extractables, Neutral Chlorinated;
- Group 24 Chlorinated Dibenzo-p-dioxins and Dibenzofurans;
- Group 25 Solvent Extractables;
- Group 27 PCBs (Total).

COD is a requirement for characterization but not for routine monitoring. COD has been included to provide a comparison with DOC and also to give an indication of the presence of oxidizable material other than organics, such as metals. COD is a measure of the maximum oxidizable material in the effluent.

Analytical test groups 21 (Extractables, Phenoxy Acid Herbicides) and 22 (Extractables, Organochlorine Pesticides) are excluded from characterization as they are not listed on EMPPL and are currently not manufactured in Ontario. There are currently no validated analytical protocols available for analytical test groups 26a (Fatty Acids) and 26b (Resin Acids).

Analytical data from daily, thrice weekly, weekly and monthly sampling may be

used toward fulfilling the characterization requirements, provided that all samples were taken on the same day and that protocols required for characterization were followed.

Open characterization (open scans) of the samples is required, at the same frequency as characterization, to determine the presence of both organic compounds and inorganic elements which are currently not on EMPPL. Any compounds identified in open characterization, not on EMPPL, will be screened through a hazard assessment procedure and if toxic will be added to EMPPL.

Routine Monitoring

The requirements for routine monitoring of effluents are specified in sections 6 through 13 of the OCM Regulation.

All routine monitoring samples must be collected and analyzed according to the principles and protocols outlined in sections 3 and 4 of the General Regulation for sampling and analysis respectively.

Section 6: Daily Monitoring

All process effluent, combined effluent or batch discharge sampling points which are also final discharge sampling points must be monitored for the following analytical test groups:

- Group 3 Hydrogen ion (pH);
- Group 5a Dissolved Organic Carbon (DOC);
- Group 7 Specific conductance.

It is preferable that these parameters be monitored continuously using on-line analyzers to provide a record of the variability of the final discharges. However, the samples may be collected and analyzed using composite sampling methods.

In cases where on-line analyzers or composite samplers cannot be used on a final discharge stream due to physical or practical limitations, each of the constituent streams must be monitored for the above parameters.

Requests to use other on-line analyzers for monitoring for parameters other than pH, DOC or specific conductance must be submitted to the Ministry for approval by the Regional Director along with sufficient data to prove that it meets MISA standards.

Subsection 4(12) of the General Regulation requires a monthly sample to be collected from each sampling point at which an on-line analyzer is used and analyzed for the parameters for which the on-line analyzer is monitoring. This will provide an indication of the accuracy of the on-line analyzer by providing an average value around which the on-line analyzer data should fluctuate.

For all process effluents, combined effluents and batch discharges not monitored as final discharges, daily pH and specific conductance analyses are

required. Plants which have biological treatment must monitor for volatile suspended solids (VSS) on a daily basis.

In some unique cases, sites already monitoring specific parameters on a daily basis, other than those listed above, will continue to do so.

Section 7: Thrice-Weekly Monitoring

All process effluents, combined effluents and batch discharges must be analyzed on a thrice-weekly basis for the following analytical test groups:

- Group 5a Dissolved Organic Carbon (DOC);
- Group 5b Total Organic Carbon (TOC) (only if TSS > 15 mg/L);
- Group 8 Total suspended solids (TSS).

Monitoring for other conventional parameters may be required on an effluent-specific basis. Monitoring is required for parameters in analytical test groups 9 through 20, 23 and 27 in instances where previous monitoring has found effluent levels above the level of concern as outlined in the OCM Regulation development document.

Section 8: Weekly Monitoring

All process effluents, combined effluents and batch discharges must be analyzed on a weekly basis for the following analytical test groups:

- Group 6 Total phosphorus;
- Group 25 Solvent Extractables (Oil & grease).

Additional conventional parameters may be required on an effluent-specific basis. Weekly monitoring is required on an effluent-specific basis for parameters in analytical test groups 9 through 20, 23 and 27 in instances where previous monitoring has found effluent levels above the level of concern as outlined in the OCM Regulation development document.

A minimum of two days between consecutive weekly samples is required in order to avoid sample correlation and thus increase sample randomness.

Weekly samples must be collected on the same day as the thrice weekly samples for the same effluent stream in order to provide as complete a set of analytical data on a given day as possible.

Section 9: Monthly Monitoring

Process effluents, combined effluents and batch discharges may require monthly analysis for any or all of the following analytical test groups based on effluent-specific considerations as outlined in the OCM Regulation development document:

- Group 2 Cyanide;

- Group 4a — Ammonia plus Ammonium; Total Kjeldahl nitrogen;
- Group 4b — Nitrate + Nitrite;
- Group 9 — Total metals;
- Group 10 — Hydrides;
- Group 11 — Chromium (Hexavalent) (only if Total Cr > 1 mg/L);
- Group 12 — Mercury;
- Group 13 — Total alkyl lead (only if Total Pb > 1 mg/L);
- Group 14 — Phenolics (4AAP);
- Group 15 — Sulphide;
- Group 16 — Volatiles, Halogenated;
- Group 17 — Volatiles, Non-Halogenated;
- Group 18 — Volatiles, Water Soluble;
- Group 19 — Extractables, Base Neutral;
- Group 20 — Extractables, Acid (Phenolics);
- Group 23 — Extractables, Neutral Chlorinated;
- Group 24 — Chlorinated Dibenzo-p-dioxins and Dibenzofurans;
- Group 27 — PCBs (Total).

An interval of two weeks between successive monthly samples is required in order to provide independent samples over as wide a range of operating conditions as possible.

Monthly samples must be collected on the same day as the thrice weekly samples for the same effluent stream in order to provide as complete a set of analytical data on a given day as possible.

Section 10: Monthly Monitoring - Once-Through Cooling Water (OTCW)

A monthly sample of a once-through cooling water effluent stream should be collected on the same day as the process or combined effluent streams with which it is associated in order to provide a better indication of plant operations at one point in time.

Section 11: Monthly Monitoring - Storm Water

A total of 12 samples, including two samples during thaws, are required during discharges of storm water at each affected storm water sampling point. Thaw samples are needed to provide an indication of the losses of contaminants during the winter months.

In cases where samples cannot be collected from a storm water sampling point because of a lack of sufficient volume of discharge, an additional set of samples must be collected in the following month in order to provide a total of 12 data points.

Samples should be collected towards the beginning of the discharge in order to catch the "first flush" effects. However, in cases where a retention structure is available to provide holdup time, a sample representative of the contents of the structure may be collected directly from the structure prior to its

discharge.

The list of parameters to be analyzed reflect the process and plant areas from which the storm water originates and passes through.

Section 12: Monthly Monitoring - Waste Disposal Site Effluent

Samples are only required monthly if a discharge of waste disposal site effluent occurs. The discharge of effluent will originate primarily as a result of a storm event. Therefore, the samples should be collected towards the beginning of the discharge to catch the "first flush" effects, as noted in the section above.

Section 13: Event Monitoring - Emergency Overflow

Monitoring of emergency overflows is intended to measure an effluent which discharges directly to a surface watercourse bypassing all designated sampling points at the site. An overflow which discharges to a treatment system need not be monitored under this Regulation.

Monitoring parameters are specified on the basis of the untreated process effluent which could be present in the overflowing effluent stream.

Section 14: Quality Control Monitoring

Each of the quality control samples to be collected provides different information about the quality of the effluent samples collected and indicates possible field contamination. Only process and combined effluents will require field quality control samples as these effluents will be monitored to a greater extent and will be used in the development of effluent limits. Information obtained from the quality control samples will be used as an indicator of sampling variability for other effluents.

Monthly analyses of quality control samples from one process or combined effluent stream are required for those parameters which are analyzed on a daily or thrice weekly basis. The quality control samples are collected on the same days as the daily and thrice weekly samples of that effluent specified in sections 6 and 7. Quarterly analyses are required for those parameters which are analyzed on a weekly or monthly basis and are collected on the same day as the weekly and monthly samples specified in sections 8 and 9.

A duplicate sample provides a measure of the reproducibility of sampling techniques used at the site including the integrity of the sample containers.

A travelling blank sample will provide an indication of any problems with sample contamination due to extraneous volatile fractions of contaminants in the atmosphere and any contaminants introduced by handling of the sample containers. Analytical test groups 1 (COD), 3 (pH) and 8 (TSS/VSS) are excluded from the analysis.

Travelling blanks for COD and TSS/VSS are relatively ineffective. Gross

contamination would be required to be detected at the ppm levels of detection for these tests. No information relevant to samples is to be gained for pH on a travelling blank of distilled water.

A travelling spiked blank sample should provide an indication of the degree of degradation of the target parameters from sampling to analysis, which in turn may indicate degradation of the target parameters in the effluent sample itself. Only analytical test groups 16 through 24 and 27 are to be analyzed as they are most likely to volatilize or degrade in the unpreserved solution.

Travelling spiked blanks are not required for the conventionals and metals. Inorganic parameters in samples are stable. Most of the samples are either preserved or are analyzed within very short time periods.

The travelling spiked blank samples must be prepared with a standard solution which contains all of the parameters in the analytical test groups for which the analyses are required.

Additional quality control samples are to be analyzed and prepared by the laboratory, as outlined in section 4 of the General Regulation. These samples will provide an indication of analytical variability and laboratory contamination due to the analytical procedures.

Section 15: Toxicity Testing

Section 5 of the General Regulation specifies the test protocols which must be followed for the fish toxicity test and the Daphnia magna acute lethality toxicity test.

Toxicity test samples are to be collected at each process effluent, combined effluent or batch discharge sampling point which is also a final discharge sampling point.

The samples must be collected on the same day as the monthly routine monitoring samples for the same effluent stream in order to aid in the interpretation and possible correlation of the chemical analyses and the resultant biological effects.

Effluent samples used for the fish toxicity and Daphnia magna tests are to be taken from the same sample container or set of containers in order to minimize the likelihood of sample differences.

A reduction in sampling frequency for the fish toxicity test from monthly to quarterly is allowed in the case where tests in three consecutive months result in mortality for no more than 20% of the population at each effluent concentration in the serial dilutions. Monthly fish toxicity testing would resume for a given stream if any one of the serial dilutions in a quarterly test showed mortality above 20%.

It is not unusual for one fish in a serial dilution sample to suffer mortality due to natural causes. Therefore, mortality greater than two fish in most cases would be an indication of some effluent lethality.

The reduction in frequency from monthly to quarterly does not apply to the Daphnia magna test. Substantially less information is available about the effects of Ontario's effluents on Daphnia magna and therefore, a full 12 months of testing is required.

Toxicity tests are required for once-through cooling water streams to verify their non-lethality. The toxicity samples must be collected on the same day as the routine monthly monitoring samples for that stream in order to provide a correlation of the chemical analyses and the resultant biological effects.

A 100% undiluted test solution may be used for all quarterly once-through cooling water samples after the initial test where both the fish toxicity and Daphnia magna tests result in mortality for no more than 20% of the population at each effluent concentration. Full serial dilution tests would be reinstated where the 100% undiluted test solution results in mortality greater than 20% of the population.

Section 16: Flow Measurement

Protocols and procedures for flow measurement are outlined in section 6 of the General Regulation.

Flow measurement accuracy requirements are a function of stream type. An accuracy of $\pm$7% is required for process effluent streams in order to establish accurate loadings on those streams with the greatest potential for impact. An accuracy of $\pm$20% is required for all other stream types, including combined effluent streams, in order to provide an estimate of the loadings and to determine their potential for impact.

While continuous flow measurement of combined effluent streams to $\pm$7% is preferred and would generally provide a more accurate determination of loadings, the Regulation allows a flow accuracy in a combined effluent stream to be estimated to $\pm$20%.

The measurement of flow in a process effluent stream requires the use of both a primary and secondary flow measurement device. Typical primary measurement devices which may be employed include:

- parshall flumes;
- weirs;
- orifice plates;
- mag meters;
- venturi meters.

Secondary measurement devices are typically electronic interfaces with the primary devices which interpret the measurements and convert them to usable flow data. These data are commonly presented in a continuous chart form or discrete readout. A continuous chart is preferred to provide a record of the flow variability.

In cases where a batch discharge, storm water or waste disposal site effluent is collected in a retention structure prior to discharge, the volume discharged may be measured using the change in the retention structure level.

The General Regulation requires that good maintenance and calibration practices for the measurement devices be followed.

Section 17: Reporting

Section 7 of the General Regulation outlines the reporting requirements for each direct discharger. The contents of an Initial Report to be submitted prior to monitoring under the Regulation are outlined in the General Regulation.

All information which is considered by the plant to be confidential business information must be so identified on each page submitted to the Ministry.

The Initial Report must be submitted to the Regional Director of the Ministry within three months and seven days following promulgation of the Regulation. This report is intended to provide the Ministry with a clear understanding of plant processes and the procedures each plant will follow in carrying out the requirements of this Regulation. Four copies of the Initial Report, including any attachments, should be provided.

A guidance document will be available from the Ministry prior to promulgation of the OCM Regulation to provide assistance in preparing the Initial Report.

Results from all analyses performed by the laboratory must be reported, including all positive numerical values at or above the laboratory calculated method detection limit. This includes results from all analyses required by the OCM Regulation as well as the results from the monthly analyses for verification of on-line analyzer performance required by subsection 4(12) of the General Regulation.

In cases where a laboratory has a method detection limit lower than the maximum allowed by the Regulation, all positive values below the MISA method detection limit must be reported. This will ensure that accurate data is reported.

Flow measurement information must be reported for all process effluent, combined effluent, batch discharge and once-through cooling water effluent streams. The duration and approximate volume of discharge of storm water, waste disposal site effluent and emergency overflow is to be reported.

The date and duration of each storm event, the amount of rainfall and the approximate duration of each discharge is required. This information is required in order to correlate the analytical data with the event which occurred. A heavy rainfall or a close succession of storm events may lead to dilution not only of the storm water but also other effluents and thereby impact the analytical results.

A schedule of the sampling dates and times for monthly and characterization sampling is required for Ministry inspection purposes. Inspection samples will be collected for the Ministry concurrent with the collection of samples by the plant site. Sampling procedures used at the plant will also be inspected during Ministry inspections.

The quantities of chemicals added to once-through cooling water are required in order to provide a greater understanding of the potential and degree of contamination. Routine monitoring on its own will not provide sufficient information as the analyses may not be performed for the added chemicals. Routine monitoring of once-through cooling water is designed to identify long-term leaks from process streams.

A flow variability report, as specified in subsection 3(5) of the General Regulation, is required for each process effluent stream from which samples were collected other than by means of an automatic flow proportional composite sampling device. This report is intended to be used by the plant to show that the effluent flow is non-variable and therefore would not require flow proportional sampling for further collection of samples. Failure to provide this report will designate the effluent stream as a variable flow stream requiring flow proportional sampling within 3 months of the report due date. Flow proportional sampling will thus begin within 3 months of the end of the twelve month monitoring period. The on-going use of approved on-line analyzers for daily monitoring of final discharges will continue to be permitted.

A report detailing any equipment malfunctions or any other problems which interfere with carrying out the requirements of both the General and OCM Regulations, and the remedial action taken, must be provided. The reasons for non-compliance with the requirements, as documented in this report, may be taken into consideration by abatement and enforcement staff investigating an act of non-compliance.

It is prudent to have backup systems available for critical elements to minimize the chances of non-compliance.

All other records which are required to be kept by this section are primarily for inspection purposes to ensure compliance with this Regulation. The records should be kept for a period of two years beyond the submission of the last report in compliance with the requirements of the OCM Regulation.

Section 18: Timing

The Initial Report is required within three months and seven days following promulgation of the Regulation.

The sampling, analytical, flow measurement, toxicity testing and reporting requirements come into force five months after promulgation of the Regulation. The five month implementation period is intended to provide sufficient time to allow the plant site to purchase and install equipment, negotiate contracts with laboratories, set up their monitoring programs and train personnel.

The requirements of sections 5 to 13 and 15 and subsections 17(5) and 17(6) are revoked one year after coming into force. In order to provide sufficient monitoring during the period before the effluent limits regulation is in place, the daily monitoring requirements for process effluents, combined effluents and batch discharges outlined in section 6 will remain in force. Only conventional daily parameters will be monitored.

The daily samples must be collected and analyzed according to the principles and protocols followed during the twelve month monitoring period. Flow measurement of these streams must continue with the accuracy specified in the General Regulation. Reporting of all analytical and flow measurement results is required according to the General Regulation. Characterization and toxicity testing will not continue under this Regulation beyond 12 months.

Subsection 18(4) of this section allows the Regional Director of the Ministry to suspend the monitoring requirements in sections 4 through 15 of the Regulation for a specific effluent stream. This subsection is intended to allow a plant to suspend monitoring if the effluent no longer exists (i.e. it is routed to treatment or it is no longer produced) or if the stream classification is changed.

PART V

MISA ADVISORY COMMITTEE REPORT REGARDING THE DRAFT EFFLUENT MONITORING REGULATION FOR THE ORGANIC CHEMICAL MANUFACTURING SECTOR

Ministry of the Environment
Ministère de l'Environnement
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September 20, 1988

The Honourable Jim Bradley
Minister of the Environment
135 St. Clair Avenue West
Toronto, Ontario
M4V 1P5

Dear Mr. Minister:

The MISA Advisory Committee is pleased to forward the attached Report on the Draft MISA Monitoring Regulations for the Organic Chemical Manufacturing Sector. This report is provided in response to your letter of August 19, 1988.

The report summarizes the Committee's comments which are subdivided into regulation and program-specific sections. I would like to point out that the report has the unanimous support of all committee members, including the representative of the Organic Chemical Manufacturing Sector.

From the advisory committee's participation in the development of this regulation, we have gained the impression that both the Ministry and Industry have shown flexibility, willingness to compromise and together have overcome the majority of controversial issues. There are issues in which differences of opinion still exist but in general the consensus building process has been successful. This is to the credit of all concerned.

As in the previous instance, it is the Committee's understanding that this report will be included in the public package to be released in the near future. The Committee would be pleased to discuss the report with you and your staff at any time.

Respectfully submitted,

Jim MacLaren

Jim MacLaren, Chairman
for the MISA Advisory Committee

International Year of Shelter for the Homeless
1987
Annee internationale du logement des sans-abri

ONTARIO MINISTRY OF THE ENVIRONMENT
MUNICIPAL/INDUSTRIAL STRATEGY FOR ABATEMENT

MISA ADVISORY COMMITTEE

REPORT regarding the EFFLUENT MONITORING REGULATIONS FOR THE ORGANIC CHEMICAL MANUFACTURING SECTOR

September 20, 1988

Jim MacLaren
Chairman

Toby Vigod
Vice-Chairman

MISA ADVISORY COMMITTEE REPORT regarding the EFFLUENT MONITORING REGULATIONS FOR THE ORGANIC CHEMICAL MANUFACTURING SECTOR

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1. INTRODUCTION

The documents comprising the draft Effluent Monitoring Regulations for the Organic Chemical Manufacturing Sector were referred by the Minister of the Environment to the MISA Advisory Committee on August 19, 1988 in advance of Committee Meeting 35 on August 26, 1988. At meetings 35 and 36 (September 9, 1988), the Committee received input from Ministry staff and representatives of the industrial sector.

This follows the review of the conceptual sector regulation in August and September of 1987, and a review of the first draft legal regulation which was withdrawn (for 'generic' reformatting) in January 1988.

The Committee's review of the regulation package recognizes the complexity of the Organic Chemical Manufacturing Sector. The sector consists of a diverse group of 19 plants, and a total of approximately 100 waste water effluents. There is a wide variation in the size and nature of the processes, products and effluents. This industrial group is perceived as being the manufacturer and discharger of a significant range of toxic and persistent chemicals including the organochlorine compounds which are of particular environmental concern.

2. ADVICE TO THE MINISTER

The MISA Advisory Committee has reviewed the draft regulation package, and generally supports the regulation which has been arrived at by a successful process of consultation.

<u>The MISA Advisory Committee recommends that with formatting improvements the regulation package be released for public scrutiny.</u>

3. REGULATION-SPECIFIC RECOMMENDATIONS

<u>FORMAT OF THE REGULATIONS PACKAGE</u>

The MISA Advisory Committee recognizes that it is a difficult task presenting in a regulation format the detailed and often complex result of the regulation development process. The Committee is concerned about the length, complexity and amount of detail in this regulation package. In order to maximize public understanding and response, the MISA Advisory Committee suggests that priority be placed on common formatting among regulations and the provision of thorough yet simple summary material.

The MISA Advisory Committee recommends that the Ministry adopt and adhere to a standard, comprehensive format (to enhance public understanding) in the supporting documentation for MISA regulations; the adopted format should be duplicated in subsequent regulation presentations.

The MISA Advisory Committee recommends that as a standard content requirement, a specific section of the rationale document explain in detail any conditions of the sector-specific regulation which over-ride the requirements of the General Monitoring Regulation.

TOXICITY

Toxicity testing is a fairly new concept in many sectors and it is important that the programs be designed carefully, and purposefully, and that the end use of the toxicity data be explained thoroughly. Generally, the MISA Advisory Committee supports the frequency and nature of toxicity testing outlined in the regulation. However, the MISA Advisory Committee has concerns about seasonal variation in effluent quality and finds that both the rainbow trout and Daphnia magna toxicity tests should be carried out on a monthly basis.

The MAC has some concern about the merits of no pH adjustment to obviously toxic effluents and favours reporting both adjusted and unadjusted values as set out in the draft Ministry "guidelines for pH adjustment of effluent samples for toxicity testing."

The MISA Advisory Committee recommends that full rainbow trout assays be performed on final discharges on a monthly basis, and that after 3 months, if no lethal effects are observed, then the pass/fail test would be performed monthly on undiluted samples.

4. PROGRAM-SPECIFIC RECOMMENDATIONS

ANALYTICAL REQUIREMENTS

The general purpose of the Monitoring regulations is to obtain information on chemical concentrations and flow volumes from which loadings can be estimated and variability assessed, with a view to preparing effluent limits regulations incorporating BATEA. It is suspected that for this industry, there will be a need for implementation, at least in some plants, of substantial process change, and installation of more advanced waste water treatment systems. This may result in a substantial change in the nature and concentrations of chemicals in the effluents. To direct these abatement activities, there is an obvious need for comprehensive information on current effluent quality.

In the judgement of the MISA Advisory Committee, the proposed monitoring schedules focus on obtaining data at very frequent intervals for chemicals which are known to be present, and which will be obvious candidates for treatment and loading reduction. We believe there should be greater emphasis on characterization and open scans which provide an opportunity to identify chemicals which are not yet known to be present.

In most cases, the present regulation will require four characterizations and four open scans (on the same samples) of each effluent. The MISA Advisory Committee would have preferred twelve characterizations which would enhance the confidence that the sampling process had been sufficiently comprehensive to both detect and provide a basis for preliminary loading estimates for previously undetected chemicals in effluent streams. An increase in the frequency of characterization could have been accomplished at the same total monitoring cost by reducing the frequency of analysis for some of the more frequently scheduled parameters.

The MISA Advisory Committee acknowledges that a number of characterizations and scans have already been carried out or are planned and, when coupled with the regulated requirements, will approach the objective of twelve. The proposed schedules therefore seek to establish a balance between a legally defensible data base for the regulation of discharges of those compounds commonly present in effluents, and the detection of unknown constituents.

In order to provide greater guidance in determining whether this balance is correct in terms of MISA goals, the MISA Advisory Committee welcomes the introduction in this regulation of a more rigorous treatment of the statistics of detecting chemicals which may appear only occasionally in effluents and the application of statistical principles to the development of subsequent monitoring schedules.

<u>The MISA Advisory Committee recommends that a detailed statistical rationale be developed and published for MISA monitoring schedules as a comprehensive guideline for the assignment of monitoring frequencies for all MISA regulations; the rationale would also specify the statistical characteristics required of reported MISA data as a pre-condition of establishing an effluent limit.</u>

The MISA Advisory Committee is also concerned that there may be insufficient effort to identify chemicals which are used in manufacturing processes but which are not on the EMPPL. This may convey a misleading impression to the public that unlisted chemicals present no threat. The Committee welcomes the inclusion in the OCM Sector regulation of mandatory open scans as a means of identifying non-EMPPL substances in the effluents; however, we are unaware of any agreed mechanism for using these

data. The MISA Advisory Committee reiterates the point raised in its letter to the Minister of November 30, 1987, that "throughout the Committee's participation in the MISA process, the most significant common problem observed is the absence of a listing/delisting mechanism. MAC cannot overemphasize that a listing/delisting process is a key element in the development of all regulations, and immediate priority should be placed on the task".

The MISA Advisory Committee recommends that the Ministry proceed immediately to the development and publication of procedural directives on the listing/delisting of parameters from the regulation monitoring schedules and the EMPPL.

METHOD DETECTION LIMITS

In its report of June 4, 1987, on the draft Petroleum Refining Sector Monitoring Regulation, the MISA Advisory Committee stressed the importance of the fact that "data for all persistent toxic compounds be reported down to the one ppb level, or the Method Detection Limit achievable for each specific compound." A Ministry committee will soon publish a document indicating MDL's to correspond with the regulatory schedules.

The MISA Advisory Committee recommends that the Ministry distribute the MDL document at the earliest opportunity, and that the MAC receive the document for review prior to the adoption of the MDL's within the General Regulation

An issue which focusses on the previous point is the required method of reporting of detected concentrations at or below the published Method Detection Limit; concentrations which may be significant in the development of loading estimates. This is a complex problem which will become more important as analytical capabilities improve and lower and lower concentrations are reportable.

To illustrate the problem, laboratories carrying out MISA analytical studies must be able to identify concentrations of compounds at the Method Detection Limit i.e. the Ministry may require an MDL of 10 units/volume; any concentration of 10 or above must be reported. An effluent may contain 7 units/volume. A "good" contracted laboratory analysing this effluent may achieve an MDL of 5 and thus is in a position to detect and report the actual value of 7. Another laboratory for the same effluent and parameter may achieve only the required MDL of 10 and will therefore report a value of Not Detected (ND), zero or "less than 10". Therefore, depending on the interpretation of the reported value, it may be to industry's advantage to employ the laboratory which achieves only the required MDL.

The MISA Advisory committee believes that it will become very important as analytical capabilities improve and lower concentrations are reported, that the Ministry clearly define how it intends to deal with data reported below the MDL level. The Organic Chemical Manufacturing Sector has raised this as a specific issue and the Committee concurs that it must be clearly resolved.

The MISA Advisory Committee recommends that the Ministry clearly defines and establishes a policy on how MISA monitoring data is to be reported and subsequently used, especially data reported below the MDL level; the Committee also recommends that the established policy supports the use of the lowest detectable value.

EVENT MONITORING

The MAC welcomes the inclusion of event monitoring in the regulation. Past records show that spills are a primary source of loadings of many chemicals. Indeed, there is a growing opinion that a large proportion of the loading of contaminants to Ontario's receiving waters is as a result of such episodic events. MAC sees the need for greater sophistication in detecting such events and in the use of automatic "event-triggered" monitoring systems which would permit the collection of effluents for subsequent open-scan analysis.

The MISA Advisory Committee recommends that the Ministry sponsor research into the development and application of advanced techniques for event monitoring and that industry be encouraged to adopt continuous automatic analyses systems where possible.

SUMMARY OF RECOMMENDATIONS

1. GENERAL RECOMMENDATION

The MISA Advisory Committee recommends that with formatting improvements the regulation package be released for public scrutiny.

2. REGULATION-SPECIFIC RECOMMENDATIONS

FORMAT

The MISA Advisory Committee recommends that the Ministry adopt and adhere to a standard, comprehensive format (to enhance public understanding) in the supporting documentation for MISA regulations; the adopted format should be followed by subsequent regulation presentations.

The MISA Advisory Committee recommends that as a standard content requirement, a specific section of the rationale document explain in detail any conditions of the sector-specific regulation which over-ride the requirements of the General Monitoring Regulation.

TOXICITY

The MISA Advisory Committee recommends that full rainbow trout assays be performed on final discharges on a monthly basis, and that after 3 months, if no lethal effects are observed, then the pass/fail test would be performed monthly on undiluted samples.

3. PROGRAM-SPECIFIC RECOMMENDATIONS

ANALYTICAL REQUIREMENTS

The MISA Advisory Committee recommends that a general statistical rationale be developed and published for MISA monitoring schedules as a comprehensive guideline for the assignment of monitoring frequencies for all MISA regulations; the rationale would also specify the statistical characteristics required of reported MISA data as a pre-condition of establishing an effluent limit.

The MISA Advisory Committee recommends that the Ministry proceed immediately to the development and publication of procedural directives on the listing/delisting of parameters from the regulation monitoring schedules and the EMPPL.

METHOD DETECTION LIMITS

The MISA Advisory Committee recommends that the Ministry distribute the MDL document at the earliest opportunity, and the MAC receive the document for review prior to the adoption of the MDL's within the General Regulation.

The MISA Advisory Committee recommends that the Ministry clearly defines and establishes a policy on how MISA monitoring data is to be reported and subsequently used, especially data reported below the MDL level; the Committee also recommends that the established policy supports the use of the lowest detectable value.

EVENT MONITORING

The MISA Advisory Committee recommends that the Ministry sponsor research into the development and application of advanced techniques for event monitoring and that industry be encouraged to adopt continuous automatic analyses systems where possible.

Submitted, September 20, 1988

MISA ADVISORY COMMITTEE

Jim MacLaren, Chairman

Toby Vigod, Vice-Chairman

Harvey Clare, Member

Isobel Heathcote, Member

Paul Hebert, Member

Don Mackay, Member

Kai Millyard, Member

Bill Neff, Member, representing
the Organic Chemical Manufacturing Sector

PART VI

MINISTRY OF THE ENVIRONMENT RESPONSE TO THE MISA ADVISORY COMMITTEE REPORT

Ontario

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09M2707

October 5, 1988

Mr. J. MacLaren
Chairman
MISA Advisory Committee
Suite 502
112 St. Clair Avenue West
Toronto, Ontario
M4V 1N3

Dear Mr. MacLaren:

I would like to thank you and the members of the MISA Advisory Committee (MAC) for your review of the Draft Effluent Monitoring Regulation for the Organic Chemical Manufacturing (OCM) Sector.

I am attaching the Ministry's response to specific recommendations made by MAC on the OCM Sector monitoring regulation.

I hope that these comments will assist members of the public in reviewing the regulation and providing comments to make it the best regulation possible.

Yours sincerely,

Jim Bradley
Minister

Enclosure

RESPONSES TO THE MISA ADVISORY COMMITTEE RECOMMENDATIONS ON THE DRAFT REGULATION

Throughout the regulation development process, the MISA Advisory Committee (MAC) has reviewed selected drafts of the regulation and provided comments to the Joint Industry/ Government Technical Committee for the OCM Sector (JTC). Many of these comments have been accepted and incorporated into successive versions of the Draft Regulation package. The MAC, after reviewing the penultimate draft, has submitted its final report which is available for public review.

A synopsis of major recommendations from MAC and the corresponding MOE responses is provided herein. Further details are contained in the MAC's final report and in the "Technical Rationale for the Monitoring Requirements" - Part II of the development document to the Regulation.

A REGULATION-SPECIFIC RECOMMENDATIONS

A.1 Format of the Regulation Package

MAC's Recommendation

The MISA Advisory Committee recommends that the Ministry adopt and adhere to a standard, comprehensive format (to enhance public understanding) in the supporting documentation for MISA regulations; the adopted format should be followed by subsequent regulation presentations.

The MISA Advisory Committee recommends that as a standard content requirement, a specific section of the rationale document explain in detail any conditions of the sector-specific regulation which over-ride the requirements of the General Monitoring Regulation.

MOE Response

A standard format for regulation packages for all sectors has now been finalized. The intent is to have a common format for all subsequent sector-specific regulation packages released to the public.

The regulation package for the OCM Sector is entitled "The Development Document for the Draft Effluent Monitoring Regulation for the Organic Chemical Manufacturing Sector".

Each sector-specific regulation development document is intended to provide in one comprehensive source, a copy of the sector-specific regulation together with the relevant information on how the regulation was developed and reasons for its format.

Specifically, the OCM Sector Development Document provides, in six sections, an overview of the OCM Sector plants, the technical rationale for the monitoring requirements, a copy of the regulation, an explanation of the key sections of the regulation, a copy of the MAC Review Report and the Ministry response to the Report.

Colour coded sections in the document provide easy reference.

A specific section, detailing conditions of the sector-specific regulation which override the requirements of the General Regulation, has been incorporated in the OCM Sector development document. This will be a standard content requirement for each of the sector-specific regulation development documents.

The Effluent Monitoring Regulation - General, which is applicable to all sectors and which was published as part of the Petroleum Refining Sector Regulation package, will now be published under separate cover to coincide with the release of each sector-specific regulation. A note, explaining the fact that the General Effluent Monitoring Regulation must be used in conjunction with the sector-specific regulation, will be provided in the preamble of the sector-specific development document.

A.2 Toxicity

MAC's Recommendation

The MISA Advisory Committee recommends that full rainbow trout assays be performed on final discharges on a monthly basis, and that after 3 months, if no lethal effects are observed, then the pass/fail test would be performed monthly on undiluted samples.

MOE Response

In view of MAC's recommendation on this issue, the Ministry will re-examine its position and develop a final policy before the OCM Sector Monitoring Regulation is promulgated.

B PROGRAM-SPECIFIC RECOMMENDATIONS

B.1 Analytical Requirements

MAC's Recommendation

The MISA Advisory Committee recommends that a general statistical rationale be developed and published for MISA monitoring schedules as a comprehensive guideline for the assignment of monitoring frequencies for all MISA regulations; the rationale would also specify the statistical characteristics required of reported MISA data as a pre-condition of establishing an effluent limit.

The MISA Advisory Committee recommends that the Ministry proceed immediately to the development and publication of procedural directives on the listing/delisting of parameters from the regulation monitoring schedules and the EMPPL.

MOE Response

In the Ministry's view, an appropriate balance must be struck between the number of characterizations and open characterizations to identify the presence of contaminants and the frequent monitoring of those contaminants known to be present.

The Ministry has discussed its rationale for monitoring frequencies in greater detail in the Effluent Monitoring Regulation for the Petroleum Refining Sector (II-5 to II-29).

The Ministry also agrees with MAC's recommendation to develop and publish procedures on listing/delisting.

A general listing/delisting mechanism will first be developed. The mechanism will then establish common principles to be applied to each sector. This document will be circulated to the JTCs and MAC.

The Ministry will be forming listing/delisting task groups. Task groups will be formed on a single sector basis with MAC's participation. The first task group (Petroleum Refining Sector) is scheduled to start working before the end of 1988.

B.2 Method Detection Limits

MAC's Recommendation

The MISA Advisory Committee recommends that the Ministry distribute the MDL document at the earliest opportunity, and the MAC receive the document for review prior to the adoption of the MDLs within the General Regulation.

The MISA Advisory Committee recommends that the Ministry clearly defines and establishes a policy on how MISA monitoring data is to be reported and subsequently used, especially data reported below the MDL level; the Committee also recommends that the established policy supports the use of the lowest detectable value.

MOE Response

The Ministry publication entitled "Estimation of Analytical Method Detection Limits (MDL)", which outlines the methods used in developing the MDLs, was forwarded to MAC at the end of September for review.

In addition, the MDLs for MISA test groups 16 to 20 were forwarded with the publication. The MDLs established for these groups were based on a review of Ministry and private sector laboratory data. The final MDLs must be appropriate for the strict regulatory requirements of the MISA program. These limits must also be achievable by private sector laboratories.

The Ministry agrees with MAC that analytical data should be reported at the lowest MDL achievable by individual laboratories. This applies even when the MDL achievable by the laboratory is lower than what is required by the General Regulation.

The Ministry will issue its final policy on the use and reporting of all monitoring data once all the parties have provided their views.

B.3 Event Monitoring

MAC's Recommendation

The MISA Advisory Committee recommends that the Ministry sponsor research into the development and application of advanced techniques for event monitoring and that industry be encouraged to adopt continuous automatic analyses systems where possible.

MOE Response

The Ministry shares MAC's satisfaction with the inclusion in the OCM Sector Monitoring Regulation of event monitoring and the regulation-stated preference for continuous on-line monitoring.

For the first time, the on-line systems will allow the tracking of spills and of exceedances in final effluents.

Ministry staff are continuing to keep abreast of the latest technology in the field of on-line analyzers and event-triggered monitoring systems, and will consider sponsoring research into the development and application of advanced techniques in this area. Industry will be encouraged to adopt continuous automatic analyses systems where possible.